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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT  
INTERNATIONAL DEVELOPMENT ASSOCIATION

THE CONGO'S ECONOMY: EVOLUTION AND PROSPECTS  
DEMOCRATIC REPUBLIC OF THE CONGO

VOLUME III  
TRANSPORT

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CURRENCY EQUIVALENTS AND UNITS

From November 6, 1961 to November 9, 1963

Unit	-	Congolese franc (CF)
US\$ 1	=	CF 64

From November 9, 1963 to June 23, 1967

Unit	-	Congolese franc (CF)
US\$ 1	=	CF 180 (selling rate)
US\$ 1	=	CF 150 (buying rate)

After June 23, 1967

Unit	-	Zaire (Z)
		equals 1,000 CF
US\$ 1	=	Z0.5

Abbreviations and Acronyms

BCK:	Compagnie du Chemin de Fer du Bas Congo au Katanga
CFL:	Societe Congolaise des Chemins de Fer des Grands-Lacs
CFMK:	Chemin de Fer Matadi-Kinshasa
EDF:	European Development Fund
KDL:	Compagnie du Chemin de Fer Kinshasa-Dilolo-Lubumbashi
MPW:	Ministry of Public Works
OTRACO:	Office d'Exploitation des Transports du Congo
SVN:	Service des Voies Navigables
UNDP:	United Nations Development Programme
VICICONGO:	Societe des Chemins de Fer Vicinaux du Congo



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STATISTICAL APPENDIX





# THE CONGO'S ECONOMY: EVOLUTION AND PROSPECTS

## Volume III - Transport

### Summary and Conclusions

1. The Democratic Republic of Congo (Kinshasa) is a large country where the major centers of population, production and trade are located in the peripheral regions; consequently, the lines of communication are long. For this reason, the Congo needs an efficient and extensive transport system as means of integrating the country politically, administratively and economically.

2. A large degree of interdependence among the transport modes characterizes the highly integrated transportation network in Congo. The waterways system, one of the largest in the world with some 15,000 km of rivers and lakes, navigable almost the year round, provides the main arteries of the transportation network. About 5,000 km of railways and some 140,000 km of roads and tracks complete the system. The railways serve either as a bypass for river sections which are not navigable or as an extension of the waterways into the hinterland. The roads serve largely as a feeder network to the railways and waterways, with the exception of the East and Northeast of the country, where they constitute the primary transportation network.

3. This network was able to handle all traffic existing before independence. Since then, the efficiency of the transport system has deteriorated for a variety of reasons. Transport organizations have been weakened by the departure of qualified expatriates and by the decline in labor efficiency. The infrastructure and equipment was damaged during the disorders or deteriorated due to a lack of investment in replacement, and poor repairs and maintenance.

4. The present transport system can handle about 70 percent of the 1958 traffic. Transport is slow and subject to delays. Some cargoes have been lost or have declined in value because transport was not available at the appropriate time to move commodities to markets or processing centers. This has made the Congo, and the Katanga province in particular, more dependent on the transport systems of neighboring countries. Finally, transport costs have risen by about 40-50 percent: their present level burdens the country's foreign and domestic trade. There is some concern that the transport system will not be able to meet the expected increase in traffic and thereby delay the recovery of the economy which is now under way.

5. The situation is not the same for each of the three principal transport modes. While the railways should be able to meet the expected increase in traffic, the condition of road and river transport is more serious. This does not mean that the railways face no problems; the efficiency of all four networks could be improved. The KDL-BCK railway serving Katanga is in better condition than the other three networks and is now handling more traffic, in terms of ton-km, than before independence. There are greater problems in the OTRACO network which comprises the mainline from Matadi to Kinshasa and a branch line serving Mayumbe, but the most difficult networks are the Chemins de Fer des Grands Lacs (CFL) serving the eastern part of the country and the Vicicongo serving the north-eastern part, which were seriously affected by the disturbances. But, since traffic has declined considerably, they have some time to rehabilitate their plant and services.

6. Navigation on the rivers and access to some ports has become much more difficult as a result of inadequate dredging, the swift propagation of river vegetation (water-hyacinth) and insufficient navigational aides. At the same time, the efficiency of river transport services has deteriorated. OTRACO, which accounts for 95 percent of all waterborne transport in the country, can handle only about 50 percent of the pre-independence traffic. The principal reasons for this are organizational and administrative problems, lack of qualified staff, insufficient operation and maintenance of equipment, and labor difficulties.

7. The road transport situation is equally difficult. The national highway organization virtually ceased to function in many areas of the country. Maintenance and repairs were neglected; many road sections are in poor condition and the surfaces have either worn off or are very thin. In addition, many ferries and bridges are out of service, so that many areas are difficult to reach or are accessible only at high cost. Many trucking enterprises lost a large part of their fleet and most of the remaining vehicles are in poor condition.

8. The Government has already taken some measures which should facilitate the rehabilitation of the transport system. Early in 1968, it approved an increase in tariffs which should enable some transport enterprises to earn a surplus or gradually reduce their losses. Special financial assistance has also been provided to enterprises which suffered more from the disorders. Thanks to the improving financial situation and the liberalization of imports most transport organizations should be able to obtain essential imported spare parts and to realize reasonable programs of maintenance and repairs.

9. In 1968, the Government requested financial assistance from the UNDP and the Bank Group for two programs of technical assistance, one for the highways and another for river transport. In 1969, the Bank Group provided a credit of \$6 million equivalent to the Congolese government to provide technical assistance for the improvement of the highway administration

and for the emergency maintenance and rehabilitation of several roads. It also included the improvement of maintenance procedures and the purchasing of an emergency supply of maintenance equipment. The Government will shortly decide on the reorganization of the highway administration, after reviewing the various alternative schemes presented by the consultants. The Bank is presently considering a possible second Highway Project which would provide the technical assistance required to implement the reorganization of the existing administration. It would also probably include assistance to improve highway maintenance and rehabilitation of several roads. The UNDP would also participate in this second project. The principal objective of the technical assistance for river transport is to prepare and assist in the implementation of programs for improving OTRACO's river transport services and the maintenance of navigation by the Service des Voies Navigables. Both programs are designed to pave the way for measures to rehabilitate the transport system. The Government gave these programs the necessary support and both projects are proceeding successfully.

10. The combination of transportation facilities located entirely within Congolese territory and linking the rich mineral production region of Katanga to the sea, has been called the National Route ("Voie Nationale"). The principal objective of transport policy has been to enhance the role of the "Voie Nationale", in particular by the construction of a new railway link as a bypass for the Kasai river. Several preliminary location and cost studies have been prepared on three possible routes between Port Francqui and Kinshasa. The Government has also considered the extension of the existing railroad from Matadi to Banana, where a new port could be built allowing the use of larger sea-going vessels than those now serving the ports of Boma and Matadi. The Government has requested the financial assistance of the Bank to study the economic feasibility of the project and its alternatives.

11. In the past, transport policy has been formulated and implemented on an ad hoc basis. This has created some problems which, though manageable for the time being, will have to receive attention and consequently, measures will have to be taken to strengthen the staff and organization of the Ministry of Transport and Communications.

12. In sum, the prospects for the rehabilitation of the transport sector are favorable. The Government is now attaching high priority to this objective and important measures have already been taken or are being considered to this end. Rehabilitation is bound to be a difficult process and improvements are likely to be realized only gradually. For this reason, the transport system may have some difficulty in coping with the expected increase in transport demand during the next few years, but eventually the measures and programs now being initiated should bear fruit and enable the transport system to fulfill its function efficiently.



## I. BASIC FEATURES

1. The Congo is the second largest country in Africa, about one-fourth the size of the United States, but with a population of around 18 million living in widely scattered settlements. The lines of communication between major centers of production and commerce are therefore fairly long. A considerable volume of the country's agricultural commodities and mineral products has to be transported 1,500 - 2,500 km to reach either Kinshasa, the capital, or the maritime ports of Matadi and Boma. For these reasons, an extensive and efficient transport system is needed to integrate the country politically, administratively and economically.

2. The Congo is fortunate in that the Congo and Kasai rivers and several lakes provide a system of natural waterways of about 15,000 km, which are mostly navigable year-round. This network serves a large part of the country and has made it possible to develop several widely dispersed areas simultaneously. The waterways could provide comparatively low cost transport for a large part of the country's products.

3. The overland transport network comprises about 5,000 km of railways and about 140,000 km of roads and tracks. This infrastructure, including the waterways, is characterized by a high degree of integration and interdependence, and little duplication. The waterways are the principal artery of the system. The railways have been built either as a bypass for river sections which are not navigable or as an extension of the waterways into the hinterland. Thus, the Congo has no unified railway network, but separate railways in different parts of the country. The roads are largely tributaries of river ports and railway stations. Only where no navigable rivers and railroads exist, mainly in the area east of Kisangani, does the road system have a trunk route function.

4. The high degree of integration means that each section is largely dependent on the performance of another; difficulties on one section affect traffic elsewhere in the system. In general, there is little competition between different modes of transport, except in a few areas where road transport offers an alternative to rail or river transport.

5. The country is largely landlocked; it has a coastline of only 30 km and its sole direct access to the ocean is via the estuary of the Congo river, which forms the boundary with Angola. 1/ Navigation on the estuary depends on integrated navigational facilities installed and maintained by each country on its own territory.

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1/ Treaty of May 25, 1891 between the Independent State of Congo and Portugal.

6. For the eastern regions of the country, use of the Atlantic gateway involves a very long overland haul. To shorten entry and exit routes to the sea for these regions, the Congo's transport system has been connected with that of neighboring countries. The principal connections permit access to the Atlantic Ocean via Lobito and to the Indian Ocean via Beira and Dar-es-Salaam. The shorter distance of these routes for some regions in the East of the country in comparison with the distance to Matadi can be seen in the following table:

<u>Table 1:</u> MAJOR DISTANCES	<u>Km</u>
Mungbere-Matadi	2,924
-Mombasa (Kenya)	2,027
Likasi-Matadi	2,742
-Lobito (Angola)	2,110
-Beira (Mozambique)	2,616
-Dar-es-Salaam (Tanzania)	2,710

7. Freight does not always move via the shortest route, nor always via the least expensive one. If transport expenses were the decisive factor, most of Katanga's foreign trade would probably be routed via the sea ports on the Indian Ocean. This is illustrated in Table 3 of the statistical appendix in indicating the total basic cost of transporting copper to Antwerp via different routes.

8. Despite some apparent advantages of the routes via the Indian Ocean, a large part of the foreign trade of the eastern regions of the country moves West, either via Lobito or Matadi and the adjacent port of Boma (Table 2, Statistical Appendix). This is the result of the present pattern of trade channels and shipping lanes; the availability of special equipment for handling some types of cargo at some ports, the quality and convenience of the available transport; differences of foreign exchange component of alternative transport costs; contractual agreements and political considerations. It has been the Government practice to move freight preferably via the national route through Boma or Matadi. The ports of Matadi and Boma account for about half of the imports and exports of the country, while the other half, almost entirely for account of Katanga, is being moved via Lobito, Beira and Dar-es-Salaam (Table 1, Statistical Appendix).

9. Although there is currently much emphasis on the national route, as evidenced by a proposal to construct a new railway link as a by-pass for the Kasai river, this should not be allowed to minimize the importance for the Congolese economy of the transport connections with neighboring countries. It is generally agreed, for example, that the production of a number of low-value commodities, such as manganese ore and zinc concentrates in southern Katanga, would be seriously hindered if these connections were broken. Moreover, these connections offer the Congo a considerable degree

of flexibility in transport capacity and in routing traffic via alternative routes. In recent years, for example, they have made it possible to evacuate the increasing mineral production from Katanga, which the national route was unable to handle. Furthermore, competition from neighboring lines serves as an incentive for the domestic transport enterprises to improve efficiency.

10. The organization of the transport sector reflects both historical and geographical factors. All rail and river transport is handled by four companies. Each company serves a particular region of the country and operates more than one mode of transport. In other words, the organization of the system has a regional rather than a functional basis. The companies operate along commercial lines and are expected to cover their costs and to make a profit. They were originally established by private interests, sometimes with Government participation, but at present they have been reconstituted, either as autonomous public entities, or as mixed corporations in which the Government has a major share.

11. The main activities of the four major companies are as follows:

- OTRACO, operates most of the waterways in the country, the railway line Matadi-Kinshasa and the Mayumbe branch line, and some road transport services.
- BCK-KDL, operates the railway network serving Katanga and the port of Port Franqui.
- CFL, operates an integrated network of railways and river and lake routes serving the eastern part of the country.
- Vicicongo, operates a railway network and road transport serving the north-eastern part of the country.

## II. CURRENT SITUATION

### General

12. When the Congo became independent in 1960, it possessed an extensive network of waterways, railways and roads, with fairly modern equipment. This infrastructure was the result of considerable investments made in the transport sector over many years, especially during the decade preceding independence.

13. Basically, this infrastructure and equipment is still in place, although it is in poor condition. Its operating efficiency and traffic handling capacity have declined for a variety of reasons, including the weakening of the organization of the system, overstaffing of the transport agencies, the lack of qualified personnel, the destruction of equipment and vehicles which occurred as the result of the civil disorders and the inadequate maintenance arising partly from financial and foreign exchange difficulties. The condition of river and road transport is more difficult than that of the railways.

14. The reasons why transport has not yet become a bottleneck in the economy are that production and traffic have declined and that the Congo has been able to rely on the transport systems of neighboring countries. However, the transport problems have contributed to the disruption of domestic markets and are hindering the expansion of export production. Several regions, especially in the East and North East where the road network provides most of the basic transport, are more or less isolated for long periods, or are in danger of becoming so, and local bottlenecks have developed in certain areas. Usually, transport is slow, and subject to frequent delays, and the cost of transport per ton-km has risen since 1960, in some areas probably by more than 40 percent. In a country such as Congo, where the average haul is long, the effect of such an increase on the competitive position of some commodities can be serious.

15. The revival and expansion of production at present underway and the resulting increase in traffic demand puts a heavy strain on the transport system. There is some concern that a lack of adequate transport will weaken incentives and delay the recovery of the economy, especially of agricultural production, where the high transport costs and risks involved are affecting the marketing of foodstuffs and the efficient evacuation of export-bound products.

16. Measures must be taken therefore, to rehabilitate existing assets and to improve the organization and efficiency of the transport sector. This can probably be achieved, as explained below, without extensive new investments in the immediate future, by increasing and accelerating maintenance and repairs and by improving management and operations. The Government is aware of the problems in the transport sector and has already



taken some measures to remedy the situation. The UNDP and the Bank Group are implementing urgent programs for the reorganization of the highway administration, the training of personnel and the rehabilitation of road and river transport.

### Traffic

17. Important changes have taken place in traffic flows. Since 1960 passenger travel has increased while freight traffic has declined. As shown in Table 4, Statistical Appendix, passenger travel by ship and rail, expressed in terms of passenger-km, increased by about 77 percent between 1959 and 1969. During the same period, freight traffic by rail and river fell from 4.3 billion ton-km to 3.5 billion ton-km, a decline of 23 percent.
18. The increase in passenger traffic is to be explained by the flight of people to safer areas in the wake of the disturbances and return journeys home, greater freedom to travel and a decline of fares in real terms.
19. The decline in freight traffic is mainly attributable to the fall in agricultural production, especially in areas affected by disorders. To a lesser extent it is also due to the fall in the volume of imports and to the fact that the national route via Port Francqui was unable to handle a greater volume of the traffic for Katanga.
20. In terms of ton-km, river freight traffic in 1969 amounted to less than 60 percent of the traffic in 1959. Despite this reduction the capacity of OTRACO, which is the organization responsible for practically all river transport in the Congo, was strained to the limit. This illustrates the deterioration of OTRACO's river transport services.
21. Railway freight, which fell until 1963, started to recover in 1964 and is expected in the near future to reach about the same level as in 1959. However, the situation of each of the four railway systems shows marked differences. The two smaller lines, the CFL serving the eastern part of the Congo and Vicicongo serving the north-eastern part, were seriously affected by the disorders following independence and the volume of freight they handle is now still considerably less than it used to be. Traffic on the Matadi-Kinshasa line is also less than in 1959, reflecting the decline in exports and imports via the national route. In contrast, the KDL network serving Katanga now handles more traffic than before independence. This increase is mainly attributable to recent changes in the direction of Katanga's trade (see para. 23 below), longer hauls, and an increase in the volume of Katanga's exports.
22. No statistics are available on road transport or on the vehicle park, but all evidence indicates that freight haulage by truck declined during the 1960's in all areas of the country, except in the province of Kongo Central. One of the reasons is that many trucking firms lost most of their equipment during the disturbances, while the remaining equipment is in

poor condition. It also appears likely that the fall in agricultural production in post-independence years reduced the demand for road transport. Although the number of vehicles still appears to be inadequate in many parts of the country, there are significant indications of an increase in the number of imported new vehicles in recent months, following the increasing demand for transport services generated by the economic revival. The removal of previous foreign exchange restrictions on the import of vehicles and spare parts and the upward adjustment of trucking rates have produced favorable environment for the revival of the road transport industry. The poor condition of the road network thus remains as the single most important obstacle for the restoration of road transport services.

23. The changes which have taken place in the direction of traffic can be illustrated by the shifts in the country's foreign trade routes (Table 1, Statistical Appendix). The combined volume of imports and exports declined from about 2.5 million tons in 1959 to 2.2 million tons in 1969. The loss is concentrated on the national route to Matadi-Boma. In contrast, traffic through Lobito has increased, mainly on account of higher imports of fuel and coal, the latter to replace lower imports from the Wankie mines in Rhodesia. The volume of exports through Sakania, near the Katanga border with Zambia, has risen slightly, mainly on account of copper shipments to Beira; the import volume which had declined due to smaller coal shipments from Wankie between 1967 and 1968 has also surpassed the 1959 level. In sum, the Matadi-Boma route accounts presently for slightly over 50 percent, the Lobito route for nearly one-third and the route via Sakania for less than 20 percent of the combined volume of exports and imports.

### III. TRANSPORT POLICY AND COORDINATION

#### General

24. Improved transportation has been recognized by the Government as a key factor in the success of its development efforts. Consequently, the transport sector has received the largest share of the funds available for national development programs in recent years, fluctuating between 25 and 36 percent of the total capital invested in economic and social programs. In the near future it is expected that still greater emphasis will be given to transportation. However, there is still a need for a systematic approach to the selection of transport investment priorities. Apparently, the principal long-term objective of transport policy is to enhance the role of the Voie Nationale. However, many measures are implemented on an ad-hoc basis as problems and potential projects arise, and there needs to be more coordination. In order to accelerate the rehabilitation of the transport sector and to promote its sound development, a government transport policy is required within which guidelines may be worked out and investment priorities analyzed. The Ministry of Transport and Communications, which is largely responsible for all general problems in the transport sector, does not have enough data to provide estimates of transport needs and needs more staff to fulfill its tasks.

25. The problems of transport policy and coordination are manageable, however. The main reason is that they are made easier by the high degree of integration of the infrastructure and by the concentration of rail and river transport in a few large enterprises, operating as autonomous entities along commercial lines. In this connection, it may be noted that although entry in road transport is free, the number of trucking enterprises and private operators is still not large enough.

26. Unlike in some other countries, transport policy and coordination in the Congo do not have to solve acute problems of disruptive competition or discrimination between different modes of transport. The situation requires, on the contrary, close supervision by the authorities to avoid transport enterprises taking undue advantage of their monopolistic position. To this end, the Government continues to supervise and control tariffs.

27. Coordination is to some extent carried out within each large enterprise, since they are involved in more than one mode of transport. Moreover, these enterprises maintain the necessary contact with each other to coordinate operations where their networks connect.

28. The concentration of transport operations in a few large enterprises also means that the Government can supervise a large segment of the transport sector through these enterprises. The task is also made easier by the regional character and autonomous status of the major transport

organizations, which have considerable flexibility in dealing with current problems and in adjusting their operations to local requirements. Their fairly large size has also enabled them to withstand the disruptive events more easily than small operators. Finally, their commercial character governs their financial performance. This and the Government's tariff policies have made it possible to limit their losses, although another revision of tariffs, together with an improvement in performance and the settling of Government's arrears to OTRACO will be necessary to prevent the repetition of the considerable deficits which OTRACO has incurred recently (see paras. 67, 78 and 79).

29. The main problems which have arisen in the fields of transport policy and coordination relate to the "Voie Nationale", investment priorities, uneconomic railway lines, tariffs, highway financing and taxation. Each of these is briefly reviewed below.

#### Voie Nationale

30. The principal objective of the Government is to enhance the role of the "Voie Nationale" and to make the country less dependent on the transport systems of neighboring countries. The aim is to evacuate Congolese products, especially the mining production of Katanga, and also part of Zambian production via the national route. This objective will take some time to achieve because the present capacity of river transport via the Kasai is limited and can only be gradually increased. Even if the capacity of the national route were not a limiting factor, some commodities might have to be transported via more economical routes, in order to safeguard their competitive position in foreign markets.

31. For several years there have been discussions over the proposals to build a new railway line between Port Francqui, the terminus of the BCK railway on the Kasai River, and Kinshasa. This project would make possible an all-rail connection between the main production centers in the eastern part of the country and the national maritime ports of Matadi and Boma and the transport of all mineral products, except probably manganese ore, via the "Voie Nationale". Several preliminary studies have been conducted on three possible routes. Preliminary cost estimates range from \$94 million to \$250 million, depending on the alignment, and some 6 to 9 years would be needed before completion (see paras. 145-150). All the studies, however, have fallen short of a comprehensive economic feasibility study. Currently, discussions are being held between the Government and the Bank

on the partial results of the last study<sup>1/</sup> and the terms of reference for a future complete economic study of the proposed project for which the Government has requested the Bank's assistance; the study would also include the feasibility of a possible extension of the railway line between Kinshasa and the Atlantic Ocean.

### Investment Priorities

32. Until recently, the emphasis on the above-mentioned project has detracted attention from the need to rehabilitate the existing system in order to provide adequate transport for the economic recovery of the country. It has also complicated the preparation of investment plans of major transport enterprises, because the construction of the new railway would greatly reduce river transport and thus raises questions about the profitability of investments for the rehabilitation and development of water transport.

### Uneconomic Railway Lines

33. The country's transport system is highly interdependent and there are only few cases of competing modes. However, there are two railway lines which might advantageously be replaced by parallel roads. The importance of the Mayumbe railway and the line from Kisangani to Ubundu (Ponthierville) has declined and road transport may offer a more economical alternative. Infrastructure is in poor condition in both lines and before decisions are reached on their rehabilitation, studies might be undertaken to determine whether it would be more economic to move all traffic by road (see paras. 113 and 158).

### Tariffs

34. The Government has followed a flexible tariff policy; tariffs of rail, river and road transport have been adjusted five times since independence. The principal objective of the most recent tariff adjustment which was effective on January 11, 1968 is to permit each transport enterprise to balance its operating budget, including normal maintenance and renewals. However, tariff increases have not kept pace with rising costs and some organizations such as OTRACO are not yet financially viable (see para. 67). While there is room for reducing expenditures, there seems to be a need for revising current tariffs. It is also to be noted that special public assistance has temporarily been granted to CFL and Vicicongo to facilitate their recovery from the serious damage and loss of traffic attributable to the recent disturbances in the northern and eastern parts of the country.

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<sup>1/</sup> The study, privately financed, is being prepared by the Consortium Lonrho, Nissho-Iwai & Cominiere. Phase I, recently completed, advocates the construction of 1,109 km of railway line with a preliminary cost of some Z104 million.

35. The tariff adjustments since independence have not been uniform for all commodities and passenger traffic. As a result important changes have taken place in the tariff structure. Calculated in terms of a stable foreign currency, the tariffs for passenger travel by rail other than first class are about one-third of the corresponding rates prevailing before 1960.

36. The tariff adjustments since independence reflect the Government's concern to protect the population from rising food prices and to limit the cost of passenger travel. It seems that the freight rates for agricultural commodities for domestic consumption or processing are insufficient to cover the cost of transport, whereas the rates for manufactured products probably exceed the cost of transport. This matter has been taken into consideration in the terms of reference for the Voie Nationale study which requires the consultants to prepare recommendations on pricing policies for all facilities making up the Voie Nationale.

#### Highway Financing and Taxation

37. Existing statistical records are inadequate to determine the revenues collected by the Government from road-user charges, but the evidence suggests that Government expenditures on highways have been considerably lower than revenues. Thus, total 1969 budget allocations for the Roads and Bridges Department of the Ministry of Public Works and Communications reached around \$6 million, while road user charges were in the order of \$31 million for the same year (see Chapter VII para. 196). Budget allocations in previous years were even lower, fluctuating from practically nil in 1961 and 1963 to about \$3 million in 1968, and were insufficient for an adequate program of road maintenance.

38. In addition to regular budget allocations, other funds are being spent on highways from bilateral aid. Since 1962 USAID has been participating in the financing of a yearly program of road maintenance entrusted by convention ("Conventions Routieres") to private enterprises having generally a direct interest in a specific road section. The program, supervised by UN advisors delegated to the Ministry of Public Works, amounted to \$4 million in 1969 for a total of some 23,000 km of roads.

39. Financial and technical assistance for the improvement of the road network is also provided by various countries, and more assistance might be available if the necessary projects could be prepared.

#### IV. WATERWAYS

##### A. River Network

40. The Congo river and its tributaries provide one of the best networks of natural, navigable waterways in the world. The waterways penetrate deeply inland and are widely distributed throughout the larger part of the country (see Map). Almost all permit navigation year-round. The Congo river has a length of 4,700 km (2,718 miles) and is the fourth largest in the world. Its waterflow, an average of 41,000 m<sup>3</sup>/sec, is twice that of the Mississippi. In total, the navigable sections of the Congo river systems amount to 12,840 km (7,902 miles). To this must be added 148 km (93 miles) for the navigable sections of its estuary and also 1,300 km (807 miles) of lake routes. This system can be divided according to the three main hydrological basins of the country.

41. Bief Maritime: This comprises the estuary, 148 km long, which is the country's main direct access route to the Atlantic Ocean. There are two major ports on the Bief Maritime - Matadi and Boma - and some minor ports. The access to Matadi, the main port 145 km upstream, is rather difficult because of an unstable approach channel and the rapid current (10 knots). Previously, dredging permitted ships with a draft of 30 feet to reach the port, but at present insufficient dredging has reduced the draft to 24.5 feet at low water (25.6 feet at high water).

42. Bief Moyen: This comprises the Congo and Kasai rivers and their tributaries above Kinshasa, and provides about 12,000 km of navigable waterways. The main terminals are Port Francqui on the Kasai, Kisangani at the far north-eastern end of the Congo river and Aketi on the Itimbiri river. The 1,740 km long stretch between Kinshasa and Kisangani is one of the finest navigable river routes in the world. Conditions on the Kasai are less favorable because of shifting sand banks and swift currents on some sections. Given adequate dredging and navigational aids, it is possible to reach Port Franckqui even in the dry season with convoys carrying a cargo of as much as 2,000 tons (1.3 m draft). Navigability on the Itimbiri is limited during the dry season, because of low water and shifting sand banks, to barges carrying only about 40 tons each.

43. Bief Supérieur: This comprises two sections of the Lualaba river in the eastern part of the country. One section connects Ponthierville to Kindu (305 km) and the other Kongolo to Bukama (645 km). It also includes tributaries of the Lualaba and the Lakes from Moero to Lake Albert.

44. In sum, the navigable network comprises:
- (i) about 2,655 km allowing a draft of 1.30 m at low water and of 2.00 m at high water, for barges with a cargo of 750 tons and up to 1,250 tons respectively;
  - (ii) about 6,580 km, allowing a draft of 1.00 at low water and 1.50 m at high water for barges with a cargo of 150 tons and up to 375 tons respectively; and
  - (iii) about 5,265 km, allowing a draft of 0.80 m at low water and 1.20 m at high water for barges with a cargo of 50 tons and up to 150 tons respectively.

B. Service des Voies Navigables - Waterways Administration

45. The organization responsible for maintaining navigation on this network is the "Service de la Marine et des Voies Navigables", which since December 1, 1967 has been part of the Ministry of Transport and Communications. Voies Navigables is responsible for hydrological studies, river training works, dredging, the provision of navigational aids and for the design, construction and maintenance of the infrastructure of ports and landing stages. It is also responsible for the preparation and implementation of maritime laws and for port and river police and pilot service on the estuary; in addition it operates three boatyards for repairs and maintenance of its equipment. The Service de la Marine et des Voies Navigables is being reorganized and will probably be divided into three agencies:

- (i) a Waterways Office in the Ministry of Transport;
- (ii) a Waterways Authority (Regie des Voies Navigables) in charge of conservancy on internal waterways; and
- (iii) a Coast and Estuary Conservancy Authority (Regie des Voies Maritimes) in charge of conservancy in the Congo estuary. These Authorities would be administered by Boards of Commissioners and would have some autonomy of management.

46. The headquarters of the Service des Voies Navigables are in Kinshasa, but operations have been organized on a regional basis according to the three main hydrological basins of the country. Since independence, the efficiency of its operations and the conditions of navigation on the three basins have deteriorated. The situation was described by consultants in 1969-70 as "chaotic", except in the Bief Maritime. Technical operations were reported to be at a standstill, owing to lack of money, supplies, spare parts and technical staff. Briefly, the present situation is as follows:



#### Bief Maritime

47. The Congo and Angola maintain navigational aids for this section, which is marked with light buoys for day and night navigation. This section has been subject to heavy siltation since 1961, following a change in the hydrological regime of the river. At the same time, dredging declined (see Table 9, Statistical Appendix) and the depth available in the access channel to Matadi decreased causing navigation difficulties and higher insurance and freight rates. However, a dredger provided by USAID has restored the previous depth of the channel. For some time, the service has been unable to carry out normal maintenance, mainly because of organizational problems and lack of spare parts for the four dredgers. Dredging operations have recently improved and two additional dredgers are being purchased with the help of the European Development Fund (EDF) and should be operational in 1971.

48. A detailed hydraulic study of the Bief Maritime financed by Belgium is being carried out by the "Laboratoire Hydraulique de Borgerhout-Anvers". With the aid of a model-design, this study aims to analyze the problems of siltation and seasonal changes in the river bed in order to determine the shipping channel which could be maintained at lowest cost.

#### Bief Moyen

49. Markings need to be improved and their number increased, especially on the Kasai where conditions of navigation are more difficult. They consist mainly of buoys with scotchlite tape, permitting night-time navigation with the aid of searchlights but they are not always clearly visible and no longer conform to a standard design.

50. The Service operates four dredgers to maintain the access to and the depth in the port of Kinshasa and Port Francqui and to maintain depth on the silted stretches of the Kasai, Itimbiri and Mongola rivers. The lack of adequate dredging has aggravated the problem of docking in Port Francqui and has contributed to some disruption of shipping schedules.

51. The dock area in Port Francqui is periodically silted so that regular dredging is required to maintain port operations. A hydrographic study of the Kasai river, north of Port Francqui, is in progress which aims to determine whether it would be possible, with minimum works, to ensure a natural self-maintaining channel and deep water alongside the quay, thus increasing the cargo-handling capacity of the port. This study is being financed by France.

#### Bief Supérieur

52. The Service des Voies Navigables has had little activity on the Ponthierville to Kindu section and none between Kongolo and Bukama. The volume of traffic is low.

### Staffing

53. The Service employs about 3,000 people, which is 1,200 more than that considered necessary by a recent consultants report. There are labor problems, partly due to low wages: the absentee rate is reported to be 40 percent. There are insufficient senior staff to provide adequate management. The UNDP is presently financing a US\$1.2 million (including costs of similar services to be rendered to OTRACO - see para. 68) technical assistance program for which the Bank acts as operating agency. Services to be provided include reorganization of SVN, financial planning and accounting and management training. The program, due to begin in August 1970, will last 18 months.

### Equipment

54. The Service has a fleet of about 300 crafts, including dredgers, river marking boats, pilot launches, pontoons, barges, etc. (Table 7, Statistical Appendix). The floating equipment is getting increasingly worn and maintenance is poor, except on the Bief Maritime where it is satisfactory, although hampered by the lack of spares.

55. The lack of equipment causes considerable losses to the economy. For example, the full benefits of deepening the access channel to Matadi cannot be realized because the Service cannot maintain the channel. Unless repairs are made in the near future, some of the equipment and other assets will be lost.

56. The ordinary budget for equipment and supplies was reduced by 40 percent from 1968 to 1969. It is barely sufficient to pay for essential supplies and leaves no room for purchasing spare parts. The Service has had no investment budget since independence so that all new port projects and renewals of equipment have been postponed.

### Investment

57. In 1968, the Service des Voies Navigables prepared a large program for equipment and a construction project amounting to Z5.5 million (US\$11.0 million), including Z1.6 million (US\$3.2 million) for procurement of two suction dredgers for the Bief Maritime, for which financial assistance has been obtained from the EDF. In 1970, the UNDP consultants (Berenschot-Bosboom) considered that rehabilitation and improvement of existing facilities and equipment were more urgently needed than new development and outlined a program amounting to Z8.2 million (US\$16.4 million), not including the two suction dredgers already financed. An additional program of new facilities amounts to Z3.0 million (US\$6.0 million). Consultants are presently drafting a detailed program for appraisal by the Bank.

### C. River Transport

58. There are no restrictions on entry in this field and anyone can organize river transport, either as a common carrier or for his own account. In earlier years, several enterprises and plantations operated their own vessels, but this practice was abandoned in 1935, mainly because it resulted in high transport costs since individual operators found it difficult to secure upstream return freight. Since then, river transport has been entrusted to two companies, OTRACO and CFL.

59. CFL is the sole operator on the Bief Superieur and also operates on Lake Tanganyika. Its river transport accounts for less than 5 percent of total waterborne freight traffic. CFL also operates the railways in the eastern part of the country, which are more important for the company than water transport. For these reasons, the situation of CFL and of its water transport operations will be discussed in Chapter VI on the railways.

60. OTRACO is the sole operator on the Bief Maritime and the Bief Moyen, and also on Lake Kivu. It currently accounts for more than 95 percent of all domestic waterborne freight traffic. Despite the recent deterioration in its transport services, there is little interest on the part of private enterprises or plantations to organize their own fleets; they continue to count on OTRACO to provide the necessary transport services. Considering that the situation of river transport in the Congo is intimately related to the performance of OTRACO, a brief review of this organization follows.

### D. OTRACO

#### Organization and Management

61. OTRACO is an autonomous public agency which comes under the general supervision of the Ministry of Transport and Communications. Besides river transport, OTRACO has been entrusted with the operation of all maritime ports and almost all ports on its river routes, the railroads from Kinshasa to Matadi and from Boma to Tshela, and road transport from Boma to Tshela and in the Bukavu area. OTRACO operates a shipyard and workshops for the maintenance and repair of its equipment. New constructions and major maintenance and repairs are customarily awarded to outside contractors.

62. OTRACO owns all buildings, plant and equipment connected with its operations, except for the basic infrastructure of the ports and the land on which its facilities are situated. The latter are owned by the Government. In return for their use, OTRACO is supposed to pay 4 percent

on the net value of such assets. Apparently this interest has never been paid, although it continues to figure as a liability in the accounts. OTRACO is responsible for its budget and is expected to cover its operating expenditures, including repairs, renewals and debt charges. The Government is expected to cover any losses and debt charges which OTRACO is unable to pay; these payments can be recovered, however, from subsequent surpluses. Because it is a public enterprise, OTRACO must submit its budgets and audited financial accounts for approval to the Government. From 1959 to 1968 OTRACO operated at a loss. On December 31, 1968, the balance of cumulative losses amounted to Z10.3 million (US\$20.6 million), which have never been compensated by the Government.

63. Since independence management has been entrusted to Congolese nationals. OTRACO is being administered by a Board (the "Conseil de Gerance"), comprising eleven members including the President and two general managers, nominated by the President of the Republic for a period of six years. Except for the three top officers, the OTRACO board members are either businessmen or civil servants. This is an improvement over previous practice, under which all Board members were officers of OTRACO. In addition to these eleven administrators, the Board includes five representatives of the Government. The Board may delegate authority to a "Conseil de Direction", consisting of the President, the two general managers, two Government representatives and two other members of the Board. In fact OTRACO comes under close control of the Government and the Minister of Transport has an exclusive right of veto on Board decisions.

64. Just before independence, plans had been adopted for a major reorganization of OTRACO. Until then, the organization relied heavily on its four operating departments, which functioned largely as self-contained enterprises and enjoyed a large degree of autonomy. This arrangement had some disadvantages, such as duplication of administrative services and facilities. To avoid such duplication and for other reasons, it was decided to centralize operations and to establish an organization based on a functional division of all activities. In 1970 the UNDP consultants again proposed to decentralize the organization of OTRACO, but still on a functional basis. No decision has been taken yet.

65. In general terms, the present organization is based on a distinction between administrative services, which have been centralized, and transport operations. However, some of the operating units continue to maintain their own administrative services. All transport operations are handled by two major departments: one for railway operations and the other for river transport. For the time being, however, the railway department is also responsible for the maritime ports and for road transport. Thus some of the characteristics and disadvantages of the old set-up still prevail.

66. OTRACO is overstaffed. Employment is presently 25,300, or 2,300 more than before independence, although tonnage handled fell by 30 percent. The staff included 218 expatriates in 1968, and is reported to be 271 in 1969 and 300 in 1970. OTRACO estimates that it needs about 380 expatriate experts to meet minimum requirements. Often the expatriate personnel could be used more efficiently if they were given more authority.

67. OTRACO is reported by consultants as being "at the end of its resources and reserves". It has suffered serious losses as a consequence of decrease in traffic. Tariffs have not been increased sufficiently to cover expenses and the responsibility of adapting employment to activity resulted in rising costs. The UNDP is presently financing a US\$1.2 million technical assistance program (including costs of similar services rendered to SVN, see para. 53) for which the Bank acts as Executing agency. Services to be provided include reorganization of OTRACO, financial planning, accounting and management training. The program, which started in 1970, will last 18 months.

68. The river transport services provided by OTRACO consist of:

- (a) regular weekly courier services from Kinshasa to Kisangani on the Congo river and to Port Francqui on the Kasai. These couriers are mixed units, made up of a passenger motor ship and specially designed barges, for passengers and cargo, to make a compact and streamlined unit carrying 500 tons of cargo. Time schedules are usually adhered to. This type of service is also provided at less frequent intervals, for the towns along major tributaries.
- (b) regular cargo convoys to Kinsangani (one convoy of up to 3,000 tons every two weeks) and to Port Francqui (three convoys of up to 3,300 tons each every two weeks). Other main route ports are serviced every three or four weeks and some minor ports once every six months.

69. The services to the towns en route and along the tributaries make an impressive list of schedules and boats. In recent years, OTRACO's river transport constituted for many remote villages the only remaining link with the outside. For this reason, the Government has refused to shorten the network, although the reduced traffic in several minor ports does not justify the service.

70. The Port Francqui route has recently attracted much attention as the main evacuation route for the mineral production of Katanga, because it is entirely within Congolese territory. This route includes 194 km on the Congo river and 604 km on the Kasai. As explained above, the transport and navigation conditions on the Kasai do not permit shipping of much more than 400,000 tons per year, made up of 250,000 tons of exported mining

products and 150,000 of general import/export cargoes. This route is currently unable to evacuate the mineral production of Katanga which is being offered. Its limited capacity is partly attributable to the problems of the Service des Voies Navigables, which has been unable to dredge regularly the access to Port Francqui, and to some difficult passes on the Kasai. It is also partly due to a deterioration of OTRACO's river transport services. The round trip to Port Francqui, for example, now takes about 21 days, in comparison with 14 days before independence. Present schedules are frequently not adhered to owing to breakdown of equipment, unscheduled stops, and labor problems.

Traffic

71. The relative importance of OTRACO's rail and river traffic since 1959 is shown in the following table:

Table 2: RAIL AND RIVER TRAFFIC

	<u>Entire Network</u>			<u>OTRACO</u>		
	<u>Total</u>	<u>River</u>	<u>Rail</u>	<u>Total</u>	<u>River</u>	<u>Rail</u>
<u>Passenger traffic</u>	(million pass-km)					
1959	468	91	378	136	75	61
1966	651	122	528	259	118	141
1968	n.a.	190	n.a.	355	180	175
<u>Freight traffic</u>	(billion ton-km)					
1959	4.3	2.0	2.3	2.4	1.9	0.5
1967	3.0	0.9	2.1	1.2	0.9	0.4
1968	n.a.	1.0	n.a.	1.4	1.0	0.4

72. Total passenger traffic, in passenger-km, by rail and river increased from 468 million units in 1959 to 651 million units in 1966, an increase of 39.1 percent. The increase on the OTRACO network amounted to 90 percent. The expansion was greatest on the Matadi-Kinshasa railway and on the ferries serving the Bief Maritime. The reasons for this expansion are the influx of people into the province of Kongo Central and low fares. Passenger traffic on the Bief Moyen is about 50 percent higher than in 1959.

73. On the other hand, total freight traffic fell from 4.3 billion ton-km to 3.0 billion ton-km, a decline of about 30 percent. Freight traffic on the OTRACO network declined from about 2.4 billion ton-km in 1959 to less than 1.3 billion ton-km in 1966, or by about 50 percent. It currently accounts for about 42 percent of such traffic in the country, against

55 percent before independence. OTRACO's rail traffic declined by about 27 percent and its river traffic by somewhat more than 50 percent. This decline, especially that of waterborne traffic, is mainly attributable to the fall of agricultural production in the interior although the situation improved somewhat in 1968 and in 1969. The commodities which have been most affected are: cotton, palm oil and palm kernels, coffee, manioc and rice, as can be seen in the following table:

Table 3: COMMODITIES ARRIVING IN KINSHASA BY BIEF MOYEN  
(000 tons)

	<u>1959</u>	<u>1967</u>	<u>1968</u>
Peanuts	7.7	4.3	5.3
Palm kernels	127.7	69.2	79.9
Palm oil	173.9	128.2	152.1
Cotton	45.7	4.4	7.3
Lumber	54.6	41.8	39.8
Coffee	49.2	27.1	32.6
Cacao	3.0	3.3	4.5
Maize	12.5	12.4	12.9
Manioc	48.9	10.9	10.0
Rice	22.2	5.5	12.2
Oil Cakes	23.2	1.9	2.1
Mining Products	200.4	195.6	197.3
of which:			
copper	(126.9)	(177.3)	(160.0)
zinc concentrates	( 53.9)	( 12.3)	( 37.0)
Other			
<b>Total</b>	<b>878.6</b>	<b>571.1</b>	<b>626.0</b>

74. As shown in the table below, the loss in downstream freight is greater on the Congo river than on the Kasai. This is to be expected, since the former serves an agricultural region which has been severely affected by the recent disturbances. There has been a sharp drop in freight shipped from Kisangani and via the Itimbiri (Table 11, Statistical Appendix). On the other hand, the Kasai route has been less affected since it is the main evacuation route for a large part of the mining production of Katanga, which has been able to maintain itself. It is to be noted that copper shipments have increased at the expense of zinc concentrates. The Kasai river is now the most important and profitable route of OTRACO's river network.

Table 4: FREIGHT REGISTERED ON ARRIVAL IN KINSHASA  
(000 tons)

<u>Route</u>	<u>1959</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>
Congo River	415.9	187.3	213.5	251.8	267
Kasai River	<u>462.7</u>	<u>326.4</u>	<u>357.6</u>	<u>374.2</u>	<u>385</u>
Total	878.6	513.7	571.1	626.0	652

75. The fall in agricultural production and income forced the population to concentrate their spending on bare essentials and to reduce outlays on manufactured products. This is reflected in the volume of freight shipped upstream, especially via the Congo river.

Table 5: FREIGHT SHIPPED FROM KINSHASA TO THE INTERIOR  
(000 tons)

	<u>1959</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>
Congo River	442.8	139.4	158	164
Kasai River	<u>365.0</u>	<u>223.0</u>	<u>216</u>	<u>221</u>
Total	707.8	362.4	374	385

#### Equipment

76. Despite the reduction in traffic, OTRACO's river transport services are operating to the full extent of that present capacity. In 1967 large quantities of palm oil had to be stored in make-shift storage facilities because OTRACO's river fleet was unable to move the oil to processing plants. The storage increased acidity and lowered the market value of the oil.

77. One of the reasons for OTRACO's limited capacity is the poor condition of its floating and other equipment which is otherwise basically the same as in 1959 (Table 13, Statistical Appendix). About one-third of the motive power and of total barge capacity is laid-up. Repairs have been slow partly due to the lack of imported materials and spare parts.

#### Financial Situation

78. OTRACO has had a chronic financial deficit since independence, (Table 12, Statistical Appendix). An increase in tariffs in 1967 enabled it to balance its operating accounts in 1968; however, no surplus is expected in 1970 and there is little doubt that if delayed maintenance, depreciation and various provisions were fully taken into account, the final operating results would be negative. Government and private shippers are slow to pay



their bills and the Government's arrears amounted, at the end of June 1969, to 22.4 million (US\$4.8 million) against 22.3 million the previous year.

79. Under the law, the Government is liable for OTRACO's deficits. The uncertainty of Government payments made it more difficult for OTRACO to establish firm investment and financing plans. For this reason, firm arrangements should be worked out for settling the accounts between the Government and OTRACO. Accumulated losses amounted to 210.3 million (US\$20.6 million) at the end of the 1968. But OTRACO had at the same time a debt of 28.0 million (US\$16.0 million) of custom duties, interests on invested capital, loans, etc. to the Government.

80. The deficits are mainly attributable to losses on account of river transport, including river port operations as shown in the table below. As a public enterprise, OTRACO is obliged to service many ports which are no longer profitable. In addition, the Port of Kinshasa has a deficit which reflects overstaffing and low productivity. The deficit on the Mayumbe rail line and associated bus services is principally due to the imbalance of traffic and to competition between road and rail transport. The losses of the Kivu network were unavoidable in view of the disturbances in that area. Despite the loss in traffic, the Matadi-Kinshasa railway and the Port of Katadi were able to realize a profit, partly attributable to recent improvements in their operations.

Table 6: OTRACO: FINANCIAL RESULTS

(in millions of zaires)

	<u>1967</u> /a	<u>1968</u>
River Transport	- 1,475	- 1,471
Kinshasa - Port	- 213	- 220
Kivu - Road Transport	- 90	- 238
Mayumbe Railway	- <u>31</u>	- <u>141</u>
Sub-total	1,809	2,070
Kinshasa - Matadi Railway	+ 1,048	+ 2,419
Matadi - Port	+ <u>287</u>	+ <u>885</u>
Sub-total	+ 1,335	+ 3,304
Grand Total	- 474	+ 1,234

Deficit (-); Surplus (+)

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/a Preliminary, excluding special taxes on the re-evaluation of assets.

### Investment

81. In 1968, OTRACO prepared a ten year investment plan amounting to 244 million (US\$88 million). According to OTRACO, this program was limited during its initial years to essential renewals of equipment and a few additions to meet traffic requirements. The UNDP consultants are presently preparing a three year investment program amounting to 231.6 million (US\$63.2 million), of which 226.2 million (US\$52.4 million) is needed to repair and restore the present facilities.

### Conclusion

82. For many years river transport has been unable to handle all the traffic being offered; it is slow and subject to frequent delays. The Government has given first priority to the rehabilitation of this sector. It has requested technical assistance from UNDP, for a team of experts to appraise management, organization and operations of both OTRACO and SVN. The Bank agreed to act as Participating and Executing Agency for this project. The draft report has been received by the Bank and the consultants are preparing a rehabilitation project which will be appraised in November 1970.

V. PORTS

A. General

83. The Congo has two major ports for ocean-going vessels, Boma and Matadi, which normally are able to accommodate ships with a draft of 30 ft. The port of Banana, at the mouth of the Congo River, is also able to handle a small volume of maritime traffic, but this port was designed for military use and the draft limit is much lower. Its importance has increased somewhat following the recent completion of a petroleum refinery nearby.

84. In addition, there are some 70 ports and landing stages on the river network and lakes. The most important are the ports of Kinshasa, Kisangani and M'bandaka on the Congo River, the port of Aketi on the Itimbiri, Port Francqui on the Kasai, Kikwit on the Kwilu and Kalemie (formerly Albertville) on Lake Tanganyika.

85. Of the above total, OTRACO operates 66 ports: 35 on the Upper Congo, 25 on the Kasai and its tributaries and 6 ports on the various lakes. Port Francqui is operated by BCK; the port of Kalemie by CFL; and the port of Aketi by Vicicongo.

86. The following table indicates the traffic handled by some of those ports:

Table 7: TRAFFIC IN MAIN PORTS

(thousand tons)

	<u>1959</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>
OTRACO Ports				
Matadi	1,384	949	1,060	1,112
Boma	222	183	183	173
Kinshasa	954	598	624	620 (app.)
BCK Port Francqui	450	420	370	n.a.
CFL Port, Kalemie	215	93	n.a.	n.a.
Vicicongo Port, Aketi	135	44	51	52

87. The evolution of traffic in these six ports reflects the different economic development of several parts of the country in recent years. The considerable decline of traffic in the ports of Aketi and Kalemie reflect the serious disturbances and fall in production in the areas they serve.

This also explains the reduction in traffic in the ports of Kinshasa and Matadi, which handle freight for all parts of the country. On the other hand, the traffic handled by the port of Boma has declined less than 15 percent since 1959, reflecting the more stable conditions in the surrounding area. The volume of traffic through Port Francqui declined less than 10 percent, owing to the expansion of copper production in Katanga in recent years.

88. The main ports have basically the same equipment as in 1959 and they are well managed, although some suffer from overstaffing and a decline in labor productivity. These ports would be able to handle the same volume of freight as before, provided productivity is restored. The situation of the minor ports is, however, quite different. Many are barely able to handle 40-60 percent of pre-independence traffic since a significant part of their equipment is out of order, mainly due to a lack of spare parts.

#### B. Matadi

89. The port is located on the left bank, 145 km upstream from the mouth of the Congo River. Because of the strong current and the narrow width of the river at this point, ships of over 120 m are not allowed to berth. The few ships which exceed this limit can dock at the auxiliary port of Ango-Ango, which also handles dangerous cargoes. Matadi has nine deep water berths and one anchorage place for waiting ships. In the event these facilities are occupied, ships may dock at Boma, about 50 km downstream, where there are six berths.

90. The following table shows the tonnages and principal export commodities handled by the port.

Table 8: FREIGHT TRAFFIC IN THE PORT OF MATADI

	<u>1959</u>	<u>1964</u>	<u>1966</u>	<u>1968</u>	<u>1969</u>
(thousand tons)					
<u>Exports</u>					
Palm Oil	225	150	104	166	140
Copper	100	79	133	172	190
Lumber	80	53	50	33	37
Zinc Concentrates	50	---	8	33	15
Oil Cakes	73	50	31	41	46
Manioc and Flour	47	3	---	---	---
Cotton	45	3	---	---	7
Rubber	40	34	30	41	38
Other	---	---	---	99	161
	851	454	451	585	634

Imports

Total	<u>535</u>	<u>418</u>	<u>475</u>	<u>513</u>	<u>541</u>
Grand Total	<u>1,386</u>	<u>872</u>	<u>926</u>	<u>1,098</u>	<u>1,175</u>

91. Total traffic in 1969 amounted to about 1,110 million tons, 20% less than in 1959, against 30% less in 1967. With the notable exception of copper, the volume of all other export commodities is lower than before independence, but the situation has been improving in the last three years. However, previous export surpluses of manioc and rice have disappeared and the Congo is now a net importer of these commodities. Exports of palm oil are also much below the 1959 level and there are indications that they decreased in 1969.

92. As explained above, Voies Navigables is responsible for channel markings and dredging operations and for maintaining the basic port infrastructure. The port itself is managed and operated by the department within OTRACO which is responsible for the Matadi-Kinshasa Railway. Since the larger part of traffic moves in and out of the port by rail, this arrangement works satisfactorily.

93. In 1970, the port was close to saturation point and the government is contemplating developing Banana, a well-protected harbor at the mouth of the Congo, which would be linked to Matadi by an extension of the railway line.

C. Kinshasa

94. The port and other ancillary installations are located on the left bank of the Congo River, which at this point widens into a broad roadstead. The port has two sections, one for river bound cargo (import section) and another for cargo coming in by river (export section). These two sections are separated by an area, 502 m long, which is available for extensions. The port is connected to the Matadi-Kinshasa Railway. This port is also managed and operated by OTRACO in view of the fact that it is the focal point of most river transport. The port is saturated because the facilities and equipment have not been adequately maintained.

95. Traffic handled in 1969 amounted to 633,000t, a slight but steady progress since 1966, but still much below (66%) the 1959 level. Composition of traffic is about the same as in Matadi since Kinshasa serves as a transit point to and from Matadi.

Table 9: FREIGHT TRAFFIC IN THE PORT OF KINSHASA  
(thousand tons)

	<u>Unloaded</u>	<u>Loaded</u>	<u>Total</u>
1959	517	437	954
1960	408	250	658
1961	175	142	317
1962	190	234	424
1963	223	230	453
1964	264	215	479
1965	248	203	451
1966	319	274	593
1967	351	266	617
1968	367	257	624
1969	392	241	633

96. Under normal conditions, the maximum capacity of Kinshasa port is 1.1 million tons. The present potential capacity, with an increase in labor productivity and in cargo-handling equipment, is estimated to be 890,000t. No extension seems to be necessary at present, unless timber traffic developments, which will require a special wharf. An increase in copper traffic, which could reach 300,000t a year by 1973, must also be provided for. The consultants are presently considering a ten year program of renewal of mobile cargo-handling equipment, rehabilitation of wharves and sheds and limited extension of facilities.

#### D. Port Francqui

97. Port Francqui on the Kasai River was built in 1921, as a terminal to the BCK railway line, mainly for the evacuation of mining products from Katanga. This port is operated and managed by BCK. The construction of the port has apparently influenced the hydrological regime of the river with the result that the dock area is regularly silted up and constant dredging is required.

Table 10: FREIGHT TRAFFIC IN PORT FRANQUI

(thousand tons)

	<u>1959</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>
Total	<u>306</u>	<u>247</u>	<u>382</u>	<u>396</u>	<u>405</u>	<u>422</u>
Unloaded	111	130	212	190	200	205
Loaded	195	117	170	206	205	217
of which:						
Mining Products	(183)	(107)	(159)	(192)	(193)	(201)
Other	(12)	(10)	(11)	(14)	(12)	(16)

98. In contrast with all other ports, the volume of freight handled by Port Francqui in 1967 apparently exceeded that of 1959. This expansion is attributable to an increase in upstream traffic, due to larger shipments of fuel oil and some other items, while the volume of downstream traffic is practically the same as before independence. This development reflects the continued expansion of the mining production in Katanga, as shown in the following table.

Table 11: EXPORTS OF MINERAL AND METAL PRODUCTS FROM KATANGA

(thousand tons)

	<u>1959</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>
<u>Via Port Francqui</u>	<u>182</u>	<u>192</u>	<u>193</u>	<u>201</u>
Copper	125	175	160	
Zinc )			30	
Other )	57	17	3	
<u>Via Dilolo</u>	<u>435</u>	<u>408</u>	<u>435</u>	<u>381</u>
Copper	63	72	83	
Manganese)			292	
Other )	372	336	60	
<u>Via Sakania</u>	<u>109</u>	<u>129</u>	<u>96</u>	<u>94</u>
Copper	90	35	46	
Zinc )				
Other)	19	94	50	
<u>Via Kalemie</u>	<u>5</u>	<u>44</u>	<u>44</u>	<u>77</u>
Copper	5	44	44	77
Total	<u>731</u>	<u>773</u>	<u>768</u>	<u>753</u>

<u>Zambia's Copper Via Dilolo</u>	84	114	154	118
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99. The port is not a bottleneck on the Kasai route; its output is high and could be increased if necessary. It works normally two shifts per day and occasionally a third shift during the night. With equipment now on order and some minor additions, the port could probably handle up to 600,000 tons provided operations are streamlined and pre-palletization and pre-slinging of copper shipments is introduced.

100. Beyond this volume, facilities will have to be expanded and a choice made between two alternatives: (a) expanding the existing port, or (b) constructing a complete new port downstream at a site where the regime of the river is more stable and the problem of siltation is avoidable. To meet the Government's objectives to increase the capacity of the Kasai route, BCK is proposing to extend the existing quay by 300 m. This solution is the least expensive but it does not solve the siltation problem. On the other hand, building a new port would be expensive. It is therefore desirable that the model study of the river regime near Port Francqui (para. 51) be completed before a decision is taken. It was hoped in 1968 that the study could be completed by the end of 1969 and that it might indicate whether it would be possible to provide, at minimum cost, a natural self-maintaining channel and deep water access to the existing facilities. The study is, however, not yet completed. In any case, no decision can be taken as to the future of Port Francqui before conclusions are reached on the feasibility of the Port Francqui-Kinshasa Railway.

#### E. Aketi

101. This port is located on the Itimbiri River, which is a tributary of the Upper Congo River. As it constitutes the western terminal of the Vicicongo railway it is operated and managed by Vicicongo. As explained before, the Vicicongo Railway serves an area which was seriously affected by civil disorders. As a result, traffic almost came to a standstill in 1965 and again during some months in 1967, but is now picking up again.

Table 12: FREIGHT TRAFFIC IN THE PORT OF AKETI  
(thousand tons)

<u>Year</u>	<u>Loaded</u>	<u>Unloaded</u>	<u>Total</u>
1959	74.9	60.4	135.3
1960	72.9	41.4	114.3
1961	30.5	22.9	53.4
1962	32.1	36.4	68.5
1963	41.5	43.0	44.5
1964	35.4	34.0	79.4
1965	----	----	----
1966	9.4	6.2	15.6
1967	23.2	21.1	44.3
1968	----	----	51.4
1969	42.9	26.7	69.6



F. Other Ports

102. Most of the ports in the interior have been neglected since independence. Therefore, high priority must be given to streamlining their operations and to the rehabilitation of their equipment. Besides the projects mentioned above, the Service des Voies Navigables is preparing plans for several other ports. In the near future, the Port of Kalemie, which suffered serious damage from the flooding of Lake Tanganyika in 1966, will have to be rehabilitated. The facilities of the port of M'Bandaka which were overage and insufficient are presently being expanded.

## VI. RAILWAYS

### A. General

103. The railways are an essential complement of the waterways since they serve either as a by-pass for river sections which are not navigable (CFMK and CFL), or as extensions of the waterways into the hinterland (BCK and Vicicongo). Thus, combined rail and river transport forms a great circular route within the country, enabling goods from far inland to reach Kinshasa or the port of Matadi. In addition, the railways in the eastern part of the country are connected to the networks of neighboring countries (East Africa, Zambia and Angola) and thereby provide several alternative routes to ports on the Atlantic Ocean in the West and on the Indian ocean in the East.

104. The total length of the railways is 5,040 km, comprising 4,200 km of meter gauge and 840 km of narrow gauge lines. The first railway, from Matadi to Kinshasa, was completed in 1898 and the last section, from Kamina to Kabalo, in 1956. Details on each section are given in Table 14.

105. The railways will continue to play an important role in the economy considering that a large part of the traffic in the country is bulk cargo to be hauled over long distances. The railways are well suited for this type of traffic. The threat of competition from road transport is limited since there are few roads running parallel to the railways. The only lines which may have become uneconomic are the railway from Boma to Tshela, 136 km long, and the line from Kisangani to Ponthierville, 125 km long. In these two areas, road transport may be a more economical alternative.

106. The railways are operated by four organizations:

- OTRACO, operating the mainline from Kinshasa to Matadi and a branch line from Boma to Tshela, or a total of about 500 km;
- Vicicongo, operating a narrow gauge line, 840 km long, serving as a feeder line for the rich agricultural areas in the north-eastern part of the country. Its western terminal is at the port of Aketi, which is served by OTRACO river transport;
- Societe Congolaise des Chemins de Fer des Grands Lacs (C. F. L.), operating lines, 1,085 km in total, in the eastern part of the country; and
- Nouvelle Compagnie du Chemin de Fer du Bas-Congo au Katanga (BCK-KDL), managing a network of 2,612 km serving Katanga.

107. From a strictly operational point of view, the latter two networks could be considered as one since they complement each other. Together, they provide the following evacuation and entry routes for Katanga and the Eastern part of the country.

- via Port Francqui or Kisangani to Kinshasa and Matadi;
- via Dilolo to the port of Lobito in Angola;
- via Lake Tanganyika to Dar-es-Salaam, and via Sakania to Beira and other ports on the Indian Ocean.

The existence of these alternative routes has provided considerable flexibility in getting goods in and out of the eastern and southern parts of the country.

108. Although, in the last several years the operating efficiency, equipment and track conditions of the railways have deteriorated, the total freight traffic is only slightly less than it was in 1959. The BCK network is able to handle a greater volume of freight traffic than in 1959, but the other three networks are able to meet current transport demands and have some excess capacity only because the traffic has significantly declined.

109. Railway traffic since independence shows similar development to river transport.

Table 13: RAILWAYS: PASSENGER AND FREIGHT TRAFFIC  
(millions of units)

	<u>Passenger-Km</u>			<u>Ton-Km</u>		
	<u>1959</u>	<u>1966</u>	<u>1969</u>	<u>1959</u>	<u>1966</u>	<u>1969</u>
OTRACO	61.4	141.2	145.7	566	385	453
BCK	278.7	353.0	468.0	1590	1644	1796
CFL	31.9	32.4	n.a.	166	70	n.a.
VICICONGO	<u>5.8</u>	<u>1.3</u>	<u>10.5</u>	<u>57</u>	<u>8</u>	<u>40</u>
TOTAL	377.8	527.9	n.a.	2379	2107	n.a.

110. Passenger travel increased 40 percent between 1959 and 1966, or about 5 percent annually, whereas freight traffic declined 10 percent. This pattern is not uniform for all parts of the country: rail traffic declined considerably in the areas served by CFL and Vicicongo, which were most affected by the disturbances in recent years; it declined less on the Matadi-Kinshasa line and it increased on the BCK network. However, on OTRACO, BCK, and VICICONGO for which 1969 figures are available, passenger and freight traffic showed substantial increases between 1966 and 1969. A brief review of the current situation of each network follows:

B. OTRACO

General

111. The original concession for the Matadi-Kinshasa railway was granted in 1887 to a private organization, the "Compagnie du Congo pour le Commerce et l'Industrie." The line was completed in 1898. A new alignment and a new 1.067m gauge track were completed in 1932. This layout has basically remained the same ever since. The Mayumbe branch line, from Boma to Tshela, was completed in 1923. In 1936, these lines were transferred to OTRACO, which had been established the year before.

Equipment

112. Despite the new layout completed in 1932, the main line has about 640 curves, of which about 20 have a radius of less than 200 m, limiting speed to maximum 60 km/h. The track has been laid with 33 and 40 kg/m rails, long-welded and laid on stone ballast. The line has been fairly well maintained and is in sufficiently good condition to meet traffic requirements. Renewals on about 120 km are behind schedule and deserve high priority in the investment program. Signalling equipment is in good working order. In sum, the basic infrastructure is still adequate to meet current and foreseeable traffic requirements.

113. The condition of the Mayumbe branch line is poor and complete track renewal is being considered. Before a decision is made on this and on the purchase of new locomotives and rolling stock for this line, it seems advisable to investigate whether it ought to be maintained. The traffic on the line shows a great imbalance, because almost all general cargo moving inland and all passenger traffic is being transported on a parallel road. Consequently, the railway is being operated at a financial loss mainly to transport agricultural goods from inland (lumber, bananas, palm oil and palm kernels, cocoa, coffee, etc.) to Boma. It may be more economic for the country to move all traffic by road. Shippers of such commodities as lumber admittedly find rail transport cheaper than road transport, but this is because they do not bear the full cost of rail transport.

114. OTRACO's locomotives and rolling stock as of January 1, 1969 and 1970 are shown on Table 15. The number of diesel locomotives, passenger coaches and freight wagons has increased during 1969 by 20 percent, 35 percent, and 12 percent respectively. OTRACO's equipment is fairly modern as a whole; all wagons are bogie type, equipped with automatic couplings. The workshops are well equipped and fairly well managed.

### Traffic

115. As shown in Table 16, passenger travel on the CFMK has steadily increased from 1959 to 1963 when it was almost three times that of 1959; traffic dropped sharply in 1964 and 1965 but started to increase again in subsequent years. The volume of freight traffic has been increasing continuously since 1961, with a drop in 1965 due to general conditions prevailing in Congo; it is, however, still only 68 percent of that before independence. Local traffic on the line reflects the growing attraction of Kinshasa as a market; the freight movements to Kinshasa are increasing proportionately more rapidly than traffic to Matadi. Export traffic consists mainly of copper, palm oil, and local traffic of concrete, building materials, lumber, and sugar (see Table 17).

### Performance

116. Trains are running according to pre-established diagrams and timetables. Regular trains handle about 85 percent of the total traffic. Except for one suburban passenger train, no trains run on Sundays.

117. On average, diesel locomotives cover about 60,000 km annually, which is low. This is due to inefficient employment of equipment and frequent breakdowns attributable to insufficient maintenance. With improved control and maintenance, it should be possible to double locomotive performance.

118. The turn-around time of wagons used in transporting minerals is 20 days, which is very long. In this case, the main reason is insufficient storage space in Matadi, where wagons are frequently immobilized 10-15 days. The storage problem should be remedied and/or freight arrivals more closely coordinated with shiploading before new wagons are ordered. Turn-around of other wagons averaged 12 days in 1967, but this has been shortened to 6-7 days since the beginning of 1968. This improvement has been achieved through the establishment of a modern control office, which is being expanded gradually. Besides controlling the movement of trains, this office also aims at coordinating the distribution and utilization of all locomotives and rolling stock.

119. As of January 1, 1970 CFMK employed a labor force of about 4,000 which is more than should be needed: productivity is only 97,000 gross ton/km annually per employee, which is low. On the other hand, CFMK needs more experienced staff.

Financial Situation

120. The financial results of CFMK have been as follows:

Table 14: CFMK - FINANCIAL RESULTS  
(in thousand Zaires)

<u>Year</u>	<u>Revenue</u>	<u>Expenditures</u>	<u>Surplus</u>	<u>Deficit</u>
1958	685	586	99	
1959	675	608	67	
1960	526	563		37
1961	471	596		124
1962	568	666		98
1963	871	834	37	
1964	1,793	1,490	303	
1965	1,692	1,645	47	
1966	2,699	1,885	814	
1967 /a	n.a.	n.a.		1,408
1968	7,593	5,153	2,440	

/a Preliminary

121. CFMK has been earning surpluses since 1963 but incurred a deficit in 1967 following devaluation of the currency in the middle of the year while tariffs remained the same. Following an increase in tariffs on January 11, 1968, CFMK is again earning a surplus. In general, the financial situation of CFMK is satisfactory as earnings are sufficient to cover operating expenditures, depreciation and interest charges.

Investment

122. OTRACO has prepared a ten-year investment plan, as explained above (para. 81). Investments in the railways are projected as Z 27 million (\$54 million), including Z 10 million (\$20 million) for an electrification scheme to be realized after completion of the Inga hydro power plant.

123. CFMK has already ordered 6 diesel locomotives, 11 first class and 20 second class passenger wagons, 10 refrigerator wagons, and it is considering the purchase of 7 diesel shunting locomotives and 100 sliding roof wagons. In addition it has already replaced fifty freight wagons and is considering the purchase of 4 diesel locomotives for the Mayumbe railway.

124. Several considerations indicate that a review of this program is advisable: The economic justification of maintaining the Mayumbe line requires re-examination; this matter is being studied by the UNDP Consultants Berenschot-Bosboom as part of their Terms of Reference. Some equipment may not be needed if operations are better organized and higher priority should be given to track renewal. Procedures for preparing and implementing investments need review. Proposed investments have not been adequately evaluated from an economic point of view so that their priorities may be determined.

#### Conclusion

125. The organization of CFMK within OTRACO follows a pattern which is commonly adopted by railways in many parts of the world. However, operating efficiency is low, owing mainly to a lack of spare parts, inadequate maintenance and management, and labor problems. More experienced personnel are required in executive positions. The current investment program should be reviewed and coordinated within OTRACO.

#### C. Compagnie du Chemin de Fer

##### Kinshasa - Dilolo - Lubumbashi (KDL - BCK)

#### Organization, Management and Manpower

126. The Compagnie du Chemin de Fer du Bas-Congo au Katanga (B.C.K.) was established in 1906 with the following objectives:

- (i) study, build and operate, on behalf of the Congo independent State, a railway line from Katanga to Bas Congo and a railway line linking the Katanga copper area to the Benguela portuguese railway system; and
- (ii) bring its financial participation, on behalf of the State, in the Compagnie du Chemin de Fer du Katanga (CFK) and assist in the study, construction and operation of a railway line linking the Lualaba river to the Katanga southern border.

127. In 1927, the Societe des Chemins de Fer Leopoldville-Katanga-Dilolo (L.K.D.) took the place of the State in all its rights and other obligations, so that, from that date, the "Compagnie du Chermin de Fer du Bas-Congo au Katanga" acted on behalf of the "Societe des Chemins de Fer Leopoldville-Katanga-Dilolo" in so far as the railway lines linking Katanga to Bas-Congo and Katanga to Benguela were concerned, whereas it acted on behalf of the CFK in so far as the railway line Sakania-Bukama was concerned. In 1952, following the merger of CFK with the LKD, the Compagnie du Chermin de Fer du Bas-Congo au Katanga (BCK) acted as managing firm on behalf of the Compagnie des Chemins de Fer Katanga-Dilolo-Leopoldville (KDL), a Congolese company with headquarters in Lubumbashi. Since June 1955, the BCK has also operated the new line Kamina-Kabongo linking the Katanga railway system to the CFL system. In 1961, the "Nouvelle Compagnie du Chemin de Fer du Bas-Congo au Katanga" (Societe Congolaise par actions a responsabilite limitee) was established with headquarters at Lubumbashi.

128. The operation and management of the KDL being entrusted to the "Nouvelle Compagnie du BCK", the former Societe BCK has ended all activities in the Congo and has become a Belgian consulting firm with headquarters in Brussels; this firm currently receives an annual fee for services rendered to its subsidiary, the "Nouvelle BCK". In fact, the various railway lines are owned by the Societe Congolaise KDL and operated by the "Nouvelle BCK".

129. Initially, the organization of BCK-KDL was based on the departmental system, but this was changed to the divisional system in 1931. The network is divided into operational districts which are assuming increasing responsibilities and autonomy in day-to-day operations. Specialized technical departments at headquarters are responsible for all studies and plans and for the execution of new construction. This organization is satisfactory and fairly efficient.

130. The labor force at January 1, 1970, was 16,636 including about 500 expatriates, in comparison with a total of 14,227 including 668 expatriates, on January 1, 1960. Although the total labor force has risen, this is at least partly justified by the increase in traffic and it would appear that staffing is reasonably well controlled by management. BCK-KDL is in a more favorable position than other transport organizations in that it has been able to maintain a relatively large number of experienced staff.

#### Equipment

131. The network is 2,612 km long, including 775 km of electrified lines and 56 km of branch lines. The main line has been laid with 30 kg/m and 40 kg/m long welded rails, on crushed stone ballast. The track is well maintained and in good condition. Since 1960, 845 km track were totally renewed, 620,200 sleepers and 900,000 m<sup>3</sup> ballast replaced. The signalling equipment which consists of an electrically interlocked single-line token system is also in satisfactory condition.



132. Motive power and rolling stock is indicated in Table 15. During 1969, the following equipment was put into service:

- 5 main line electric locomotives
- 12 main line diesel electric locomotives
- 25 shunting diesel locomotives
- 28 4th class passenger coaches
- 300 freight cars.

With a view to save foreign exchange, BCK-KDL has converted a number of steam engines from coal to fuel-oil burning.

133. More than one-third (1,200) of the freight wagons are over-aged and will have to be replaced. The workshops are well equipped and managed and require no large investments.

#### Traffic

134. Traffic on the BCK network, in terms of passenger-km and ton-km, is currently greater than before independence, as shown in the following table:

	<u>Table 15: BCK-KDL TRAFFIC</u>					
<u>Passenger Travel</u>	<u>1959</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1969</u>
Number (thousand)	1,147	1,249	1,706	1,723	1,355	2,034
Pass. km (million)	279	296	467	470	353	468
<u>Freight</u>						
Tons (thousand)	5,109	3,357	3,963	4,307	4,500	4,842
Tons/km (million)	1,590	897	1,191	1,367	1,644	1,796

135. Traffic declined after independence, during the disturbances in Katanga, but has expanded since 1963. The reasons for the expansion in passenger travel, both in numbers and traffic units, are the rapid urbanization, greater freedom to travel and low fares.

136. The lower freight volume is due to a decline in local traffic following the fall of agricultural production in the area. On the other hand, the volume of long haul of foreign trade traffic has increased more than 20 percent (Table 18, Statistical Appendix) and this traffic, which accounted for less than 25 percent of the total in 1959, represents currently about one-third. This development is attributable to higher exports and imports (mainly of coal and fuel as replacement for local firewood). Although total tonnage declined between 1959 and 1969, from

137. The prospects are that traffic will continue to increase during the next few years as a result of a further expansion in passenger travel, an increase of about 5 percent p. a. in mineral production and the revival of agricultural production.

Performance

138. In many respects operations are efficient, but some improvements are possible. The utilization of electric locomotives amounts, on average, to 10,000 km per month and that of steam locomotives to 6,700 km, which is acceptable. However, the utilization of freight wagons amounts to 2,100 km only. The average turn-around of ore wagons to Port Francqui or Lobito is 20 to 25 days which is too long. Also, the gross tonnage of trains is about 470 tons which is low even taking into account that freight limits are imposed by steep gradients on the line Tenke-Luena. Labor efficiency has increased from 131,000 traffic units per man in 1959 to about 136,000 in 1969. Passenger trains have a regular schedule, but all freight train movements are controlled by dispatchers and have no regular timetable. If traffic increases significantly, this practice will have to be changed.

Financial Situation

139. The financial situation started to improve following the revival of traffic and BCK has been able to earn a small surplus during the past three years, even though the currency devaluation affected operating results adversely in the second half of 1967.

Table 16: BCK REVENUE AND EXPENDITURE  
(million Zaires)

	<u>1959</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>
Revenue	20.2	6.4	9.6	15.3	28.6	33.1
Expenditure	16.8	7.3	9.5	15.2	27.7	31.7
Surplus (+) or Deficit (-)	3.4	-0.9	0.1	0.1	0.9	1.4

The available information indicates that the cost of transport has increased from about 1.18¢ US per traffic unit in 1959 to 1.7¢ per traffic unit in 1968, or by about 40 percent. The unit costs are approximate. The main reason for this increase is the relatively sharp rise in expenditure on fuel and materials.

140. Owing to the increase in tariffs on January 11, 1968, BCK-KDL realized a small profit of Z 0.9 million (\$1.8 million) which corresponds to about 4.2 percent of revenue.

141. Present tariffs for different classes of traffic relate as follows to the corresponding tariffs applicable in 1959:

	<u>Coefficient</u>
General merchandise	1.06
Luggage	0.77
Mineral products for export	1.00
Passengers (1st, 2nd and 3rd class)	0.91
Passengers (4th class)	0.36

#### Investments

142. BCK has a five-year investment program (1966-71) which has been prepared on the basis of: (i) decisions reached at Lusaka in June 1966 whereby the Congo undertook to assist Zambian copper exports via Lobito and Matadi and; (ii) a program made in July 1967 to improve the "Voie Nationale" from Katanga to Matadi, via Port Francqui. The total cost of this program is estimated at Z 24 million (\$48 million).

143. Since the agreement with Zambia has not been fully implemented, the investment program had to be adjusted and BCK has, therefore, prepared a list of materials and equipment urgently required for 1970 and 1971. Total cost of the program is estimated at Z 13.6 million (\$27.2 million), of which Z 6.3 million (\$12.6 million) has already been ordered under bilateral credit arrangements with Italy and Japan. Assuming that BCK will wish to order some items from specific suppliers for standardization purposes, there remains still a balance of about Z 4.9 million (\$9.8 million) for track material and equipment to be financed from other sources.

144. At present both BCK and OTRACO face uncertainties in framing their investment programs. It is not clear how much Zambian copper may need to be transported via the national route in the Congo, particularly in the light of alternatives for the handling of this traffic developed by Zambia and Tanzania. It also remains uncertain whether and when the proposed rail link between Port Francqui and Kinshasa will be constructed and what investments should be made in the meantime to improve transport on the Kasai River and expand the facilities at Port Francqui.

#### New Railway line Port Francqui - Kinshasa

145. The possibility of building a railway line linking the BCK network to the CFMK line, as a by-pass for the Kasai river, has a long history. The concession for such a line was incorporated in the 1906 Convention between the Congo and the parent BCK company. In 1928 as a first step in this scheme, BCK completed the railway from Bukama to Port

Francqui. This provided an integrated rail-river route between Bas-Congo and Katanga, entirely within Congolese territory. Construction of the by-pass railway link has been revived recently, mainly as a means to reduce Katanga's dependence on the railway services of neighboring countries and possibly to assist Zambian copper export.

146. Three possible alignments have been studied, initially by the former BCK and more recently by a Japanese railway mission as well as by a Consortium consisting of Lonrho, Nissho-Iwai and Cominiere. The estimated length and construction costs of these alignments are as follows:

<u>Line</u>	<u>Length</u>	<u>Construction Cost</u>	
		<u>Total</u>	<u>Per Km</u>
Northern line	857 km	\$ 94 mln	\$110,000
Middle line	1,267 km	\$250 mln	\$197,000
Southern line	1,360 km	\$192 mln	\$141,000

147. The Japanese mission favors the middle link, although it is more costly, on the grounds that it would help develop a potentially rich agricultural area and that the cost of operation of this line would be lower than on the two other lines. The BCK study, on the other hand, favors the northern route for technical reasons and also because it is the least expensive. The construction of either line would require about 6 years, after contracts have been let. Construction of the southern route would require about 9 years. The Lonrho, Nissho-Iwai, Cominiere Consortium is completing a feasibility and preliminary engineering study on a railroad alignment which, with very slight variations follows the middle line as outlined by the earlier Japanese study.

148. The above cost estimates must be regarded as tentative. They are based on preliminary surveys, except for the northern route which was surveyed in more detail by BCK in the early thirties. It should be noted that the above estimates do not include the cost of locomotives or other equipment needed to operate the line.

149. The proposed link raises complex issues, and the studies which have been prepared so far do not provide an adequate basis for reaching a decision. There is still considerable doubt, for example, concerning the traffic which would be attracted by each of the proposed new lines. Zambia makes alternative arrangements for its traffic (the Tanzania-Zambia Rail Line) and this traffic ought therefore to be disregarded. As the BCK study indicates, the continued export via Lobito of the manganese produced near the Angolan border may be necessary in order to avoid prohibitive transport costs via the national route; any traffic forecast should include only those commodities which could be transported at acceptable cost by the national route. Other complications are: (1) according to an international agreement, 10 percent of the Katanga production has to be

exported via Beira; (2) part of Katanga's production of copper or other high value products may have to be exported via Lobito in order to ensure continued transport of manganese, which is not very profitable for the Benguela railways; and, (3) part of the production of Katanga may have to be routed via CFL in order to ensure the financial viability of that system.

150. None of the studies have examined the impact which the construction of the line would have on river transport, although the ensuing losses would have to be taken into account in the economic evaluation of the proposed alternatives. Also, a proper evaluation of alternative transport costs will have to be made to ensure that copper exports remain competitive on the world market if prices decline. The Congolese Government has requested the World Bank to undertake such a study which will include also the feasibility of a possible extension of the existing railway line from Kinshasa to the Ocean (Kinshasa-Banana line).

#### Conclusions

151. Taking into account the difficult conditions in recent years, the BCK is still reasonably well organized, although measures are needed to improve staff training, labor productivity and the efficiency of some equipment, especially the utilization of freight wagons. Suitable arrangements should also be worked out to supply fuel oil from the new refinery at Moanda so that BCK can complete the conversion of steam engines from coal to fuel.

152. The construction of a new railway link between Bas-Congo and Katanga will depend on the results of the comprehensive economic and technical feasibility study referred to above. In the meantime, first priority must be given to increasing the capacity of river transport.

D. Societe Congolaise des Chemins de Fer des Grands Lacs (CFL)

Organization and Manpower

153. The present company is the successor of the "Compagnie des Chemins de Fer du Congo Superieur et Grands Lacs Africains", a Belgian company established in 1902 to construct and operate a combined system of rail-river and lake transport. The Congo acquired ownership on January 1, 1965, and the system was then managed by a "mixed company" which included representatives of both the Congolese Government and the former Belgian concessionaire. The "mixed company" was abolished on January 26, 1967, when CFL took over completely and became a "parastatal", an autonomous public organization, like OTRACO. However, one-half of the fleet on Lake Tanganyika has remained the property of the Belgian company which continues to operate on the Lake.

154. CFL operates currently 2,905 km of combined rail-river and Lake routes (see Map at end of this volume), as indicated below:

(a) Railway lines: (1,067 m gauge)

Kabalo-Kalemie	273 km
Kabalo-Kabongo	246 km
Kabalo-Kindu	441 km
Ubundu-Kisangani	<u>125 km</u>
Total	<u>1,085 km</u>

(b) River system:

Kindu-Ubundu	310 km
Kabalo-Malemba N'Kulu	<u>300 km</u>
Total	<u>610 km</u>

(c) Tanganyika Lake system:

Kalemie-Kigoma	345 km
Kalemie-Kalundu	345 km
Kalemie-Mpulungu	385 km
Kalemie-Maba and Kabimba	<u>135 km</u>
Total	<u>1,210 km</u>

This is an extensive network; the average freight haul is about 450 km and that of passenger travel about 200 km.

155. The general organization of CFL is similar to that of OTRACO. The present management which has recently been installed is still untried and will face the difficult task of rehabilitating the company. The Board consists of eleven administrators, including the Chairman, and five "Commissaires du Gouvernement". The administrators, although nominated by the Government, include representatives of outside interests and two OTRACO managers. All departments have Congolese nationals as directors, except the Technical Department which is managed by two expatriates.

156. The labor force which in 1967 was 6,400 including 68 expatriates reached in 1968, 7,844 including 75 expatriates. CFL is aware that the labor force is excessive in relation to the current volume of traffic and is taking steps to progressively reduce the staff to some 4,400. In 1969 the number of staff dropped to 7,211 and in 1970 to 6,667. The number of expatriates employed at present by CFL is 73, 59 under direct contract by CFL and 14 from French Technical assistance scheme.

#### Equipment

157. As a result of inadequate maintenance during the past few years, the track is in poor condition and track renewal (ballast, sleepers and rails) should be carried out without delay, especially on the Kalem-Kabalo sections, at the rate of about 30 km annually during the next four years. To carry out such a program, it may be necessary to reorganize the Permanent Way Department and to give consideration to improved staff training.

158. The 125 km railway line from Kisangani to Ubundu, which is isolated from the main network, is in poor condition. However, before further considerable investments are made, it would be desirable to investigate whether this line should be retained, in view of the low volume of current and expected traffic. Road transport might prove to be more economic even though this would require the construction of a road and the organization of efficient road transport services between Kisangani and Ubundu.

159. Signalling equipment over the entire network has been neglected and will have to be inspected for proper maintenance, and the telecommunications equipment, which has been seriously damaged during the recent disturbances, must be rehabilitated.

160. Motive power and rolling stock, of January 1968, is shown in Table 15. Maintenance and repairs have been neglected, and the locomotives and rolling stock are in poor condition. The company may be unable to improve this situation during the next few months because of the shortage of spare parts and qualified personnel, especially for maintaining the diesel locomotives. After taking into account the four diesel shunting engines ordered recently, the number of diesel locomotives is adequate.

Recent orders for eight passenger coaches, six refrigerator wagons and thirty freight wagons for the transport of copper should considerably alleviate the current shortage of rolling stock. This equipment is sufficient to handle a moderate increase in traffic.

### Traffic

161. Both passenger and freight traffic have declined as a result of the serious disturbances in the area (Tables 4 and 5). Recently, traffic has begun to recover and, at the present time, passenger travel is about the same as before independence, but freight traffic is only about one-third of pre-independence level. Current freight traffic would have been much lower if no emergency arrangements had been made to ship a sizeable volume of copper from Katanga via Kalemie to Dar-es-Salaam. Copper shipments via this route were very small in 1959, but reached about 44,000 tons in 1967 (Table 2) and are expected to reach about 100,000 tons in 1970. It has been decided by the Government that any further increase in copper tonnage will be shared between the BCK and CFL routes, with 3,000 tons being earmarked for CFL.

162. Current freight consists mainly of copper, in transit from Katanga or Zambia, to Dar-es-Salaam; tin and cassiterite in transit to Lobito and/or Matadi; beer; fuel in drums and in bulk; cotton and cotton seed; cement and various agricultural products. About 80 percent of total traffic is concentrated on the main line from Kabongo (junction with BCK) to Kalemie and Kigoma (junction with East African Railways).

163. The commodity position of the traffic on CFL is illustrated by the cargo handled in the port of Kalemie, which in 1967 was as follows:

Table 17: CARGO HANDLED IN KALEMI

	<u>Main Commodities</u>
Tonnage imported via Kigoma: 23,989 t.	fuel & gas oil: 13,000 t
Tonnage exported via Kigoma: 43,400 t.	copper: 42,000 t
Traffic from Congolese ports: 8,500 t.	cement: 2,400 t sugar: 2,300 t
Traffic to Congolese ports: 16,000 t.	Coal: 7,831 t general merchandise

These figures illustrate the importance of copper shipments, which are carried at more profitable rates than most other goods.



### Performance

164. The performance of CFL was adversely affected by the recent disorders in the area and by a change in management. Currently, the average load is barely 10 tons per freight car, while the average annual run of a loaded freight car is 6,000 km only; the traffic density over the system is 90.10 net tons whereas the gross tonnage is 300.10 gross tons. Turn-around time of the freight cars is very long. This is reflected in the relatively high cost of transport, which on average corresponds to about 3¢ US per ton-km or passenger-km.

165. Despite the low volume of traffic, CFL has been able to balance its operating accounts and to make a small profit in 1966 (before depreciation). In 1968, with a 6 percent depreciation rate, there was a net deficit of Z 20,000. In 1969, due to a revaluation of stocks, the accounts have shown a net benefit of Z 232,000.

### Investment

166. CFL has prepared an investment program to be financed by British and German credits amounting respectively to Z 3 million and DM 14 million. Major items are units for Lake Tanganyika transport, four diesel locomotives and spare parts and materials. Although, in the long run, consideration should be given to the closing of the uneconomic Kisangani-Ubundu railway line, the Government has decided to rehabilitate the line which it considers as useful for the agricultural development of the Eastern Provinces. This program could be improved by adding a further Z 1.0 million (\$2.0 million) for spare parts and the rehabilitation of signalling and telecommunications equipment.

### Conclusions

167. CFL provides important transport services in the eastern part of the Congo and to ports on the East coast of Africa. Its present position has been affected by disturbances in the areas it serves, by the destruction of equipment and also by the shortage of qualified personnel. Its recovery is dependent on the revival of production in the area and on continued shipments of copper from Katanga. To provide a low cost service and to meet future traffic requirements, CFL needs physical rehabilitation and more qualified personnel.

168. In the rehabilitation program, high priority must be given to: track renewal of the main line Kabongo-Kalemi; proper repair and maintenance of diesel locomotives; inspection and maintenance of signalling equipment and the establishment of a reliable telecommunications system. The implementation of such a program will probably require a reorganization of the technical departments, additional qualified staff and an effective training program. Since the CFL and KDL networks complement each other, the possibility of their common operation should be considered. Such an arrangement would offer important benefits. CFL would be able to rely on the well organized technical departments of BCK and both networks would be able to realize important savings in operating expenditures.

E. Societe des Chemins de Fer Vicinaux du Congo (Vicicongo)

Organization, Management and Manpower

169. Vicicongo was established in 1924 by "Cominiere", a Belgian holding company. After independence it became a "mixed company", in which the Government now holds 43.56 percent of the capital and Cominiere the remainder.

Vicicongo operates:

- |  |              |
|--|--------------|
| - a railway line from Aketi to Mungbere:   | 683 km       |
| - a branch line from Komba to Bondo:   | 121 km       |
| - a branch line from Lienart to Titule:  | <u>32 km</u> |
|  | Total 836 km |
| - road transport services in the provinces of Ueles, Kibali-Ituri and North Kuvu | 15,000 km    |
| - the port of Aketi on the Itimbiri River  |              |

The Board has eleven members, including the Chairman. Five Board members have been nominated by the Government and six by the Cominiere group.

170. As of December 31, 1969 Vicicongo had a labor force of 3,293 1/, including 32 expatriates which compares with a total of 4,808, including 158 expatriates, at the beginning of 1960. Despite this reduction, the labor force is still more than sufficient to handle the current low volume of traffic. However, the number of experienced staff is insufficient and while it is intended to raise the number of expatriates to 34, Vicicongo is finding it difficult to recruit competent expatriates willing to work in this remote area, which has been the scene of several disturbances.

Equipment

171. Motive power and rolling stock, as of January 1, 1970, is indicated in Table 15. Some equipment has been lost or damaged during recent disturbances and repairs and maintenance have been delayed because of the shortage of spare parts and materials. An attempt is being made to rehabilitate 17 diesel locomotives in poor condition; 10 overage steam engines have been withdrawn from service and replaced by 5 diesel locomotives under bilateral

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1/ Including road maintenance labor under an agreement with AID (about 560 persons).

credit managements. Other rolling stock is sufficient to handle the present low volume of traffic. Vicicongo is taking advantage of this slack period to repair its equipment, which should be able to handle the anticipated increase in traffic during the next two or three years.

### Traffic

172. As shown in the following table, both passenger and freight traffic have been very low during the past three years, due to the disturbances in the area. The situation has improved as order was restored and expatriates, mostly farmers, felt secure enough to return. The considerable potential of the area is best illustrated by the sharp increase in the volume of cargo handled by the port of Aketi since 1967.

Table 18: VICICONGO - TRAFFIC  
(in thousands)

<u>Year</u>	<u>Railways</u>		<u>Road Transport</u>		<u>Port of Aketi</u>	
	<u>Pass.-km</u>	<u>Ton-km</u>	<u>Pass.-km</u>	<u>Ton-km</u>	<u>Inland Bound</u>	<u>River Bound</u>
1959	5,759	57,198	13,037	24,310	60.4	74.9
1960	5,482	50,521	13,818	20,898	41.4	72.9
1961	8,134	24,611	16,909	12,472	22.9	30.5
1962	8,043	35,450	19,758	12,237	36.4	32.1
1963	8,173	40,230	15,040	8,883	43.0	41.5
1964	3,566	35,586	10,184	6,771	34.0	35.4
1965	25	61	20	2,368	-	-
1966	1,345	7,750	829	2,234	6.2	9.4
1967	4,876	22,880	3,067	4,861	21.1	23.2
1968	8,529	26,746	6,216	3,878	23.4	28.7
1969	10,467	39,535	7,683	4,988	26.7	42.9

173. The Vicicongo network serves as an evacuation road for agricultural products of the north-eastern part of the country. Its western terminal is the port of Aketi whence the goods are forwarded by river to Kinshasa. Freight from Kinshasa consists mainly of manufactured goods, fuel, cement, salt, seed and general cargo. Its future very much depends on the revival and development of agriculture and connected industries, the rehabilitation and proper maintenance of feeder roads to the railway. The Vicicongo railway is a simple line, built before road transport became a practical possibility. With the advent of road transport, keen competition developed and is likely to be renewed as soon as the road network has been rehabilitated

174. Some industrial ventures had resumed operations since the disturbances and there are definite signs that a revival of agricultural production is under way. The agricultural potential of the area is roughly estimated at: 50,000 t of cotton, 25,000 t of coffee, 25,000 t of palmoil,

20,000 t of palm kernels and about 10,000 t of rice. Vicicongo estimates that it should be able to attract sufficient tonnage in two or three years to achieve financial viability.

#### Financial Situation

175. The financial position of Vicicongo is difficult. Owing to the decline in traffic, its operations have resulted in a deficit since 1960. Thanks to a Government grant of Z 494,000 made in 1964, the company has been able to rehabilitate its facilities at least partially. The remaining balance of Z 208,000 under this grant will be insufficient, however, to complete the rehabilitation program and Vicicongo is requesting additional financial assistance from the Government.

176. Year 1968 shows a slight profit of Z 21,957 and 1969 a profit of Z 21,300 which reduces to Z 827,918 the total deficit accumulated from 1960 to 1967; this last amount includes Z 538,314 owed by Vicicongo to the Government (annual instalments for financial charges). Until the revival of agricultural production is well under way and traffic exceeds 150,000 tons per year, it is likely that the Vicicongo financial situation will continue to be difficult. In this respect, a deficit is to be expected in 1969-70 as traffic remained at about 80,000 tons owing to lower production of cotton, paddy, groundnuts, and maize.

#### Investment

177. Vicicongo has no definite investment program, because of the high degree of uncertainty regarding future developments in the area and the availability of financial resources. To meet the expected increase in traffic, Vicicongo has placed orders for the following items:

- 5 diesel locomotives	Z 217,925
- rail welding equipment and mechanical shovels	Z 43,553
- materials for track rehabilitation	<u>Z 115,000</u>
Total	Z 366,500

As far as road transport is concerned, 20 buses to operate in the Eastern Province Zone were delivered at the end of 1969. However, the roads are, at present, in such poor condition that most of these buses are standing idle.

178. The extension of the railway from Aketi to Bumba, which would serve as a by-pass for the Itimbiri river, has been under consideration for many years. Navigation of this river is rather difficult. Low water during about four months of the dry season requires the use of special shallow draft barges. In 1964, the Vicicongo decided in favor of the railway extension (185 km long) rather than improving the navigation of the Itimbiri and construction is now under way.

179. The cost of the railway extension has been estimated by Vicicongo at Z 4.5 million and that of the port extension at Z 1.6, or a total of Z 6.1 million (\$12.2 million). These estimates include 3 to 5 percent for contingencies, but no allowance for price escalation, engineering or interest during construction. Taking these into account it is tentatively estimated that the cost could increase to about Z 6.2 million for the railway and Z 2.2 million for the port, or a total of Z 8.4 million (\$16.8 million). Assuming a foreign exchange component of about 70 percent, the required foreign financing would be about US\$12.0 million. On this basis, the average construction cost of the line would be about \$35,000 per km, which is reasonable. No additional locomotives or rolling stock would be required.

#### Conclusions

180. Vicicongo is a light railway, which despite serious difficulties in recent years is still reasonably well managed and operated. It has sufficient equipment to handle the anticipated traffic in the foreseeable future, provided it receives the necessary Government support to complete its rehabilitation.

## VII. ROADS AND ROAD TRANSPORT

### A. The Road Network

181. The road network serves mainly as a feeder system to the river ports and railways. Only where no navigable rivers and railway connections exist, mainly in the area east of Kisangani, are there important trunk roads. Although road inventories are either incomplete or lacking in some provinces, the total length of the road network can be estimated at about 140,000 km, comprising roads of all standards (Table 19). Roads of national importance amount to about 37,000 km, the rest being of only regional or local importance. By far the larger part of the network consists of earth roads and tracks. Only about 2,000 km have a bituminous surface, not counting 500 km of city streets.

182. The roads are now in great need of improvement. Before independence they had been lightly constructed since this was generally adequate for linking isolated areas with light traffic to the main arteries of the transportation system. In general, roads were upgraded gradually, pari passu with the growth in traffic and the size of vehicles. While this policy had some advantages, it resulted in a road network which could not withstand long periods of low maintenance. Consequently, the disruption of maintenance since 1960 has led to serious deterioration of the road network. The surface of many roads has worn off or has become very thin; deep longitudinal troughs have formed, and many sections are full of holes. Since 1960, almost 80 percent of the 300 ferries in the country have also become inoperative, and many bridges need to be replaced or repaired.

183. While the existing network deteriorated, some new roads were built early in the sixties - altogether some 600 km, of which the Bank helped finance about 300 and US AID and FED the rest. US AID has also assisted in the reconstruction of 17 bridges and the repair of 35 ferries.

### B. Administration

184. Responsibility for the roads rests primarily with the Department of Roads and Bridges, which is one of the six departments of the Ministry of Public Works. The National Laboratory and the Equipment Department also collaborate with the Department of Roads and Bridges in road work. The performance of the Highway Administration has deteriorated and a strengthening of personnel and a reorganization are required. The United Nations and other organizations are providing 37 experts, but their effectiveness is limited. An exception is the maintenance program. Technical assistance for the improvement of the Highway Administration is also being provided by consultants for the Technical Assistance and Highway Administration Project, financed partly by UNDP and partly by IDA.

185. The Department of Roads and Bridges has three divisions: (i) National Roads, (ii) Bridges, Traffic and Legislation, and (iii) City Streets, Drainage and Sewage. A new organization was established late in 1969, which includes a fourth division for Ferries under the department's authority. Although it exists de facto, the new organization has not yet been legally approved. The department needs more staff and particularly more experienced senior officers. Its central office in Kinshasa has a staff of about 130 persons of which 45 percent are permanent personnel, the rest being under contract. About 15 foreign experts also assist the department both at the central and provincial levels.

186. The Laboratory Department includes the National Laboratory of Kinshasa and two other provincial laboratories. About 80 percent of the activity of the department is devoted to highway work. In the National Laboratory most of the equipment is out of order and too old. More qualified personnel are needed.

187. The Equipment Department is responsible for the acquisition, operation and maintenance of equipment for Public Works, including automobiles for other ministries. The organization of the department is yet to be defined as part of an expected full reorganization. Theoretically the department provides the Department of Roads and Bridges with the equipment needed for highway maintenance and construction work. In practice its effectiveness is limited: most of the equipment is out of use and its workshops are unable to repair the old equipment because of lack of skilled personnel and spare parts. The department includes over 1,000 staff of which 50 percent are permanent personnel. No complete equipment inventory is available; however, it is estimated that approximately 90 percent of the equipment is out of order, and that most of it is beyond repair.

188. Under UNDP 1969-1971 Highway Services and IDA Credit 152-CK provision was made for technical assistance by consultants for the improvement of the Highway Administration. In early March 1970 the consultants recommended the establishment of an autonomous Highway Authority under the supervision of a delegate appointed by the President. An alternative which is being considered is that responsibility for highway administration would remain in the Department of Roads and Bridges under the authority of the Minister of Public Works but that the present organization would be improved by creating a financial section and by transferring certain activities from or into the department.

189. The Highway Administration has too many employees who often have poor qualifications. Under the UNDP/IDA project, provision was made for staff training. Future needs for the improved Highway Administration are estimated at about 28,000 personnel, of which 900 would be staff and 24,000 maintenance labor. The rest would be drivers, equipment specialists, etc. Existing personnel need training to meet the requirements of the new Highway Administration, whatever organizational alternative is selected (see para. 188). Labor training must be carried out within the local

structures of the Highway Administration. Secondary level training (foremen, draftsmen, accountants) can be carried out by existing institutions, with some minor adjustments in their programs. Higher level or managerial training still remains a problem for which new arrangements are being considered. The Ministry of Public Works is now working out a training program aimed at the administration management staff.

190. Highway administration (construction, maintenance and planning) is by far the most important activity of the Ministry of Public Works. Allocations for the Department of Roads and Bridges alone represent over 50 percent of the Ministry's ordinary budget. Current expenditures for 1970 are estimated as follows:

<u>Department</u>	<u>1970 Ordinary Budget (US\$ equivalent)</u>
Roads and Bridges	4,170,000
Laboratories	250,000
Equipment	2,050,000
Other	<u>1,550,000</u>
Total	8,020,000

191. Mechanized accounting is to be introduced which will improve budgetary control. To that end a special department was created early 1969 in the Ministry of Finance. However, there are problems with the present system in the provinces, where the employees of the local highway services are controlled by the governors or the heads of the districts rather than by the MPW headquarters.

192. The following procedures are used for road construction and maintenance:

(i) Work carried out under contract: usually limited to roads of national or regional importance. As regulated by law of December 5, 1969, contract procedures include open or restricted tender and contract by negotiation. In an attempt to avoid formalities and delays, public tender is becoming exceptional. Repair and maintenance work is frequently carried out by private enterprise under convention. Conventions are regulated by law of January 28, 1969, and are usually limited to earth roads of national or regional importance (see para. 198).

(ii) Work carried out by Administration Forces: the Highway Administration, through its provincial Services, carries out maintenance work on roads of national or regional importance. Control of funds for this work has been an issue between the central administration and the provincial authorities. The local and country roads are maintained by the local services under the Governors' authority, from funds provided in the provincial budget.



193. Present traffic regulations are based on the Belgian code elaborated before independence. Since 1960 the regulations have been amended several times, although not publicized. Although maximum weight permitted is eight tons for a single axle and 12 tons for a tandem axle, these limitations are not enforced. Trucks having a rear-axle weight of 13 tons are currently being operated by several transport agencies.

### C. Finance

194. Budgetary allocations for the Roads and Bridges Department have fluctuated widely during the past few years, declining from about \$12 million equivalent in 1958 to practically zero in 1961 and 1963, and rising to about \$3 million in 1968 and \$6 million in 1969. These latter figures should not be regarded as a measure of physical work on the road network, since a large part was spent on salaries and wages for labor whose productivity was low.

195. In addition to the budget, other funds are being spent on highways by USAID and FED. Altogether, these sums are insufficient to maintain the network, which continues to deteriorate. More financial aid could be obtained from various countries and organizations if the requests were supported by adequate economic analysis and justification.

196. It is not possible to quantify all revenues accruing to the Government from road-user charges, since the statistical records are inadequate. However, a rough estimation for 1969 could be summarized as follows:

<u>Item</u>	<u>Total Revenues for 1969</u> <u>(in US\$ million equivalent)</u>
Import duties on vehicles	7.6
Import duties on spare parts <u>/1</u>	6.0
Tax on business earnings	6.6
Registration tax	0.2
Motoring tax	4.0
Insurance tax	1.0
Fuel tax <u>/2</u>	<u>5.6</u>
Total	31.0

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/1 Tax represents 43% of the import value of spare parts. Total revenue estimated here may be substantially different from reality since no reliable information is available on spare parts consumption.

/2 Average retail prices are 11.90¢ per liter of gasoline and 7.0¢ per liter of diesel fuel. Taxes represent 2.96¢ and 0.60¢ respectively.

Although the above figures are only approximate, it seems clear that tax revenue from road users could be a major financial resource for a program of road maintenance and rehabilitation, but that, in practice, only a minor part of it (see para. 194) is used for highway expenditures.

#### D. Road Maintenance

197. The Department of Roads and Bridges does little maintenance. Some construction enterprises are working on the projects financed by USAID and other agencies and could undertake more road improvement work if the necessary funds were provided. Recently, some relatively important rehabilitation projects have been started, financed out of extra-ordinary budgets from the Office of the President.

198. Since 1962 USAID has been financing a program of road maintenance from counterpart funds. Under this program, maintenance is entrusted by convention to privately-owned plantations, industrial enterprises and others, which usually have a direct interest in specific roads for their own operations. Contracts are agreed upon for a 12-month period. In 1969 over 80 conventions were concluded, covering about 23,000 km of roads. The system is being supervised by UN advisors delegated to the Ministry of Public Works. Maintenance under this system is limited to a minimum, and the average cost is equivalent to about US\$170 per year kilometer. Although up to 1969 USAID financed 75 percent of the convention program, in 1969 its share was reduced to 50 percent. In 1970 it will provide only 25 percent and in 1971, it is intended that the program be financed completely by the Government. Most of the enterprises involved in convention maintenance work have an interest in the results and generally fulfil their obligations. Such enterprises are major firms which have equipment and personnel for the task and are financially able to survive frequent delays in payments.

199. On the whole, the convention program has been and still is of great utility. At relatively low cost, roads essential to the economy of many regions have been maintained and repaired. The system is inadequate, however, to meet present requirements. It does not cover many economically important roads, for example, in areas where peasant agriculture predominates and where there are no large enterprises prepared to undertake road maintenance. Also, a large part of the road network has already deteriorated beyond the point where maintenance under convention can serve a useful purpose. Many sections require major reconstruction and rehabilitation, and it will be necessary to reshape and regravell several roads at a cost of \$5,000 to \$10,000 per km, which is clearly beyond the present range of conventions. About 80 percent of the paved roads require urgent maintenance to prevent costly reconstruction works at a later date. The annual cost of the maintenance may be estimated at almost US\$1,000 per km.

200. An emergency rehabilitation program for 1970-1971 was proposed by the consultants under the UNDP/IDA project. The program covers four provinces and aims at rehabilitating over 1000 km of high priority earth roads which are now almost impassable. Total cost is estimated at US\$9.4 million equivalent (US\$5.9 million for roads, US\$1.2 million for ferries and bridges, and US\$2.3 million for maintenance and laboratory equipment). The program will be partly financed under IDA Credit 152-CK.

201. A further rehabilitation program covering all the provinces is also being prepared by the consultants for the three-year period 1971-1973. This program should be completed by March 1971. However, preliminary conclusions on road priorities have already been made known to the Government.

#### E. Road Transport

202. The trucking industry is in a difficult situation. It almost ceased to function in those parts of the country affected by the civil disturbances, where production was interrupted and the vehicle fleet requisitioned. Some enterprises ceased to operate, while the others had to work with only part of their previous fleet. In addition, the deterioration of the roads, labor problems and the lack or high price of spare parts have made trucking a highly expensive industry. The inaccessibility of some areas and the high cost of transport are currently a major impediment for the recovery of the economy, especially of agricultural production.

203. There is little reliable information on vehicle operating costs but it is estimated that average transport cost may be on the order of 10¢ US per ton km. However, this figure is not very representative, since the actual cost may differ substantially from the average, according to the particular road. Although on good asphalted roads the cost may be on the order of 5¢ per ton-km, on good earth roads the cost is about twice as much. Over a major part of the road network, however, actual cost is much higher, especially because of low speed and high rate of wear and tear of trucks. Even on the limited part of the network which is being maintained under the convention system, the maximum safe speed for trucks is about 30 km per hour. Annual repair costs are frequently high, well above 30 percent of the total cost price of the truck. Tariffs to some extent reflect these circumstances although in some instances they are not realistic. Average freight tariffs differ particularly between Central Congo - 6 to 10¢ US per ton-km and the remaining provinces - 8 to 20¢ US per ton-km.

204. There is also little information on traffic. The last systematic traffic counts were carried out in 1959. The results of this survey confirmed the feeder road character of the network, and revealed that less than 5 percent of the roads carried more than 50 vehicles per day, and 85 percent of the network had less than 10 vehicles per day. The count also showed that traffic was heavily concentrated on a small part of the network; more than 90 percent of all traffic was carried by 14 percent of the network. Isolated spot counts performed in recent years by the enterprises

carrying out road maintenance under the convention system have indicated that traffic has declined in most road sections. Traffic counts and origin-destination studies are currently being carried out under the UNDP/IDA project. Although no conclusions can be reached yet, the preliminary results indicate that traffic is rapidly increasing and that present traffic volumes are generally similar to those registered in 1959, and slightly higher on the main paved roads.

205. At present, there is no information on the size and age composition of the vehicle fleet. The only information available is the number of trucks and buses imported into the country since 1959.

<u>Year</u>	<u>Trucks</u>	<u>Buses</u>
1959	2,600	60
1960	---	---
1961	1,010	80
1962	2,170	80
1963	2,310	70
1964	1,850	110
1965	4,280	90
1966	7,300	90
1967	7,500	90
1968	8,600	100

It is not possible to infer anything definite from these statistics alone. Most of the vehicles imported in previous years have been lost during the disturbances or have depreciated rapidly owing to poor road conditions and poor driving - trucks rarely last longer than two years in the Congo. Altogether, the vehicle fleet in 1969 was estimated at about 55,000 vehicles, of which about 35% were trucks.

206. The restoration of order and the revival of the economy now underway have increased the demand for vehicles, and there are significant indications of a rapid increase in the number of vehicles in recent months. Transport enterprises plan to rebuild their fleets as soon as possible. This will be easier than in previous years because foreign exchange restrictions on the import of vehicles and spare parts have been lifted. Furthermore, trucking operations have become profitable again, following the adjustment of trucking rates. Consequently, the general conditions for a revival of road transport are favorable. The most important remaining obstacle is the poor condition of the road network. Its rehabilitation is needed to provide access to certain areas, to reduce vehicle operating costs, and to prevent more costly repairs and reconstruction at a later date.

F. Conclusions

207. The foremost problem for the road sector is not the provision of new roads, but the rehabilitation and preservation of the existing network. A major problem in this connection is the constitution of a highway administration capable of preparing and carrying out the rehabilitation of the highway network.

208. The Government has agreed to these priorities and is prepared to take effective measures to improve the highway administration and to rehabilitate the highway network. At the Government's request, UNDP and the Bank Group are helping to finance and to organize a program to improve the highway authority, and to prepare and implement programs for the rehabilitation of the more important highways in the country. The Bank is acting as Executing Agency for the UNDP project. The Government would be prepared to entrust management to expatriates for a transitory period and has already allocated part of its extra-ordinary investment budget to help finance this program.



STATISTICAL APPENDIX

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TABLE 1: EXPORTS AND IMPORTS BY MAJOR ROUTES<sup>1/</sup>  
(000 tons)

<u>Years</u>	<u>Matadi- Boma</u>	<u>Total</u>			<u>Total</u> <sup>2/</sup>
		<u>Lobito</u>	<u>Sakania</u>		
1959	1,522	532	393		2,447
1965	752	727	523		2,002
1966	959	628	470		2,057
1967	973	656	375		2,004
1968	1,150	737	333		2,220
1969	1,156	641	409		2,206
<u>Exports</u>					
	<u>via Matadi - Boma</u>	<u>via Lobito</u>	<u>via Sakania</u>		<u>Total</u>
1959	950	447	142		1,539
1965	435	514	128		1,077
1966	499	396	176		1,071
1967	570	410	164		1,144
1968	640	437	116		1,193
1969	608	385	97		1,090
<u>Imports</u>					
	<u>ex Matadi - Boma</u>	<u>ex Lobito</u>	<u>ex Sakania</u>		<u>Total</u> <sup>2/</sup>
1959	572	85	251		908
1965	317	213	395		925
1966	460	232	294		986
1967	403	246	211		860
1968	510	300	217		1,027
1969	548	256	312		1,116

<sup>1/</sup> Excluding a small volume of imports and exports through Kalimie and other less important routes, estimated at 100,000 tons in each direction.

<sup>2/</sup> Excluding imports of petroleum products.

Source: Estimates prepared by IBRD Mission.

TABLE 2: EXPORT ROUTES OF MINERAL AND METAL PRODUCTS FROM KATANGA

(000 tons)

	1959	1965	1966	1967	1968	1969
<u>GRAND TOTAL</u>	<u>730.0</u>	<u>758.8</u>	<u>731.5</u>	<u>773.6</u>	<u>820.0</u>	<u>n.a.</u>
<u>Via Port Francqui</u>						
<u>Total</u>	<u>181.7</u>	<u>107.1</u>	<u>166.4</u>	<u>192.4</u>	<u>193.0</u>	<u>201.3</u>
Copper	124.9	104.8	138.8	174.7	160.0	183.7
Cassiterite	-	2.3	13.8	3.1	2.3	1.6
Zinc concentrate	56.8	-	13.8	14.6	30.7	16.0
<u>Via Dilolo</u>						
<u>Total</u>	<u>434.7</u>	<u>511.3</u>	<u>395.0</u>	<u>408.3</u>	<u>435.1</u>	<u>381.5</u>
Copper	62.9	95.2	69.9	72.5	85.9	58.7
Zinc concentrate	29.2	57.1	44.8	15.7	17.5	12.6
Zinc - metal	34.5	36.3	24.4	34.5	40.7	59.1
Cobalt	7.0	3.5	5.0	3.3	10.8	10.9
Manganese	299.6	310.6	241.0	272.4	276.9	237.1
Other	1.5	8.6	9.9	9.9	3.2	3.0
<u>Via Sakania</u>						
<u>Total</u>	<u>108.9</u>	<u>116.4</u>	<u>138.1</u>	<u>129.3</u>	<u>96.1</u>	<u>93.6</u>
Copper	90.3	63.3	67.2	35.3	39.4	43.8
Zinc concentrate	-	32.7	32.6	66.6	35.9	45.6
Zinc - metal	18.6	20.4	35.7	27.4	20.8	4.0
Other	-	-	2.6	-	-	0.2
<u>Via Kalemie or Kisangani</u>						
Copper	<u>4.7</u>	<u>24.0</u>	<u>32.0</u>	<u>43.6</u>	<u>44.0</u>	<u>78.4</u>
Copper in transit from Zambia via Dilolo	(83.5)	(1.4)	(100.4)	(101.0)	(154.0)	(n.a.)

Source: BCK

TABLE 3 : TRANSPORT COSTS TO ANTWERP

(Zaires per ton)

1. Copper price: Z.400.00 per ton (\$800.00)

<u>Route</u>	<u>Lubumbashi blister</u>	<u>Luilu cathodes</u>	<u>Likasi electro</u>
Matadi	72.71	72.71	72.71
Lobito	72.68	64.61	72.73
Beira	59.30	75.09	67.09
Dar-es-Salaam	60.20	-	67.92

2. Copper price: Z.700.00 per ton (\$1,400.00)

Matadi	87.77	87.77	87.77
Lobito	87.74	77.75	87.80
Beira	63.15	82.70	72.77
Dar-es-Salaam	64.05	-	73.60

N.B. Transport costs vary in accordance with the world market price of copper.

Source: GECOMIN

TABLE 4 : PASSENGER AND FREIGHT TRAFFIC

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
<u>Passenger Traffic</u>											
	(million passenger - km)										
<u>Total</u>	<u>469</u>	<u>429</u>	<u>313</u>	<u>393</u>	<u>651</u>	<u>(720)</u>	<u>740</u>	<u>651</u>	<u>709</u>	<u>768</u>	<u>831</u> <sup>1/</sup>
River transport	91	90	98	135	143	(118)	132	123	569	653	n.a.
Railways	378	339	214	258	508	(602)	608	528	140	115	n.a.
<u>Freight Traffic</u>											
	(million ton - km)										
<u>Total</u>	<u>4,336</u>	<u>3,419</u>	<u>2,178</u>	<u>2,296</u>	<u>2,292</u>	<u>(2,326)</u>	<u>2,396</u>	<u>2,989</u>	<u>3,060</u>	<u>3,284</u>	<u>3,513</u> <sup>1/</sup>
River Transport <sup>2/</sup>	1,997	1,425	842	1,029	1,017	(720)	666	879	946	1,051	n.a.
Railways	2,339	1,994	1,336	1,267	1,275	(1,596)	1,730	2,110	2,114	2,233	n.a.
BCK-KDL	1,590	1,388	1,003	897	897	(1,191)	1,367	1,644	1,617	1,697	1,796
OTRACO	526	440	303	328	313	369	316	386	405	446	453
CFL	166	115	5	7	25	n.a.	47	72	69	63	n.a.
Vicicongo	57	51	25	35	40	36	-	8	23	27	40

1/ Preliminary estimates

2/ Excluding the Bief Maritime

Source: OTRACO, KDL-BCK, CFL and Vicicongo.

TABLE 5 : PASSENGER TRAFFIC

(million passenger-km)

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
<u>OTRACO</u>											
Matadi-Kinshasa	61.4	63.2	96.1	94.3	161.4	131.9	108.9	141.2	153.6	175.6	145.7
River Transport	70.7	72.6	84.8	120.9	122.2	109.0	117.7	110.5	126.0	96.9	111.9
Lac Kivu	1.9	2.2	2.5	1.9	3.1	2.8	3.2	2.7	1.8	3.1	3.0 <sup>1/2</sup>
Bief maritime	1.7	2.2	3.5	5.1	5.0	5.9	6.5	4.6	6.3	5.9	6.7
Total	<u>135.7</u>	<u>140.2</u>	<u>186.9</u>	<u>222.2</u>	<u>291.7</u>	<u>249.6</u>	<u>236.3</u>	<u>259.0</u>	<u>287.7</u>	<u>281.5</u>	<u>267.3<sup>1/2</sup></u>
<u>Vicicongo</u>											
Aketi-Mungbere	<u>5.8</u>	<u>5.5</u>	<u>8.1</u>	<u>8.0</u>	<u>8.2</u>	<u>3.6</u>	-	<u>1.3</u>	<u>4.9</u>	<u>8.5</u>	<u>10.5</u>
<u>CFL</u>											
Kisangani-Ponthierville	4.4	4.6	6.3	7.1	5.2	n.a.	0	-	1.2	4.8	n.a.
Lualuba-N	1.6	0.7	0	1.5	2.5	n.a.	2.8	2.9	2.6	2.6	n.a.
Lualuba-S	4.6	4.4	3.9	3.4	4.0	n.a.	0	0.7	1.2	1.3	n.a.
Railway-Rest.	27.5	22.7	7.5	20.4	37.4	n.a.	29.6	32.4	33.7	56.0	n.a.
Lake Tanganyika	10.1	7.6	3.7	2.1	5.8	n.a.	1.4	1.4	1.6	5.6	n.a.
Total	<u>48.2</u>	<u>40.0</u>	<u>21.4</u>	<u>34.5</u>	<u>54.9</u>	n.a.	<u>33.8</u>	<u>37.4</u>	<u>40.3</u>	<u>70.3</u>	<u>85.1</u>
<u>BCK</u>											
KDL-BCK	<u>278.7</u>	<u>243.0</u>	<u>96.2</u>	<u>128.0</u>	<u>296.0</u>	<u>466.6</u>	<u>469.5</u>	<u>353.0</u>	<u>376.1</u>	<u>408.1</u>	<u>468.0</u>
<u>GRAND TOTAL</u>	<u>468.4</u>	<u>428.7</u>	<u>312.6</u>	<u>392.7</u>	<u>650.8</u>	<u>(719.8)</u>	<u>739.6</u>	<u>650.7</u>	<u>709.0</u>	<u>768.4</u>	<u>830.9</u>
Railways	377.8	339.0	214.2	257.8	508.2	602.1	608.0	527.9	569.5	653.0	n.a.
River	90.6	89.7	98.4	134.9	142.6	(117.7)	131.6	122.8	139.5	115.4	n.a.

Source: OTRACO, Vicicongo, CFL and BCK

TABLE 6 : FREIGHT TRAFFIC

(000 tons)

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
<u>OTRACO</u>											
CF Matadi-Kin	2169	1534	1005	1124	1206	1230	1076	1285	1323	1431	1469
CF Mayumbe	111	123	132	125	119	127	133	120	125	121	103
River-Voies fluviales	1740	1253	729	909	935	801	713	961	993	1066	1118
Lac Kivu	49	25	14	23	26	11	26	46	27	50	69
<u>Vicicongo</u>	<u>135</u>	<u>114</u>	<u>53</u>	<u>69</u>	<u>85</u>	<u>69</u>	<u>n.a.</u>	<u>16</u>	<u>54</u>	<u>57</u>	<u>77</u>
<u>CFL</u>											
CF Kisangani- Ponthierville	157	111	21	34	46	n.a.	0	0	15	15	n.a.
Lualuba-N	37	18	0	2	14	n.a.	31	43	26	13	n.a.
Lualuba-S	157	112	21	30	42	n.a.	-	11	15	7	n.a.
CF Rest.	319	226	19	18	62	n.a.	105	156	159	142	n.a.
Lac Tanganyika	347	281	196	195	196	n.a.	124	95	112	132	n.a.
<u>CF BCK-KDL</u>	<u>5109</u>	<u>4396</u>	<u>3870</u>	<u>3637</u>	<u>3357</u>	<u>3963</u>	<u>4307</u>	<u>4500</u>	<u>4443</u>	<u>4481</u>	<u>4842</u>

Source: OTRACO, Vicicongo, CFL and BCK



TABLE 7 : SERVICE DES VOIES NAVIGABLES: FLOATING EQUIPMENT<sup>1/</sup>

Item	Bief Maritime	Bief Moyen	Bief Superieur	Total
Dredgers	4	5	2	11
River marking boats	3	21	3	27
Push boats	-	1	1	2
Tug boats	3	7	2	12
Barges and Houseboats	2	9	2	13
Pontoons	15	7	4	26
Floating Cranes	-	6	1	7
Pile Drivers	1	3	2	6
Lighters and barges	17	15	8	40
Launches and ferries	66	61	18	145
First Aid boats	3	-	-	3
	<b>TOTAL</b>			
	114	135	43	292

<sup>1/</sup> As of January 1, 1970.

Source: Service des Voies Navigables.

TABLE 8: PERSONNEL

	1959	1967	1968	1969
<u>OTRACO</u>				
National	22,030 <sup>1/</sup>	24,403	26,012	25,287
Expatriates	<u>887<sup>1/</sup></u>	<u>281</u>	<u>205</u>	<u>223</u>
Total	22,917 <sup>1/</sup>	24,684	26,217	25,510
<u>CFL</u>				
National	10,234 <sup>1/</sup>	6,606	7,772	7,137
Expatriates	<u>335<sup>1/</sup></u>	<u>70</u>	<u>75</u>	<u>73</u>
Total	10,569	6,676	7,847	7,210
<u>BCK</u>				
National	13,579	16,340	16,141	16,092 <sup>2/</sup>
Expatriates	<u>668</u>	<u>550</u>	<u>474</u>	<u>544<sup>2/</sup></u>
Total	14,247	16,890	16,615	16,636 <sup>2/</sup>
<u>Vicicongo</u>				
National	4,481 <sup>1/</sup>	2,580	3,142	3,259
Expatriates	<u>168<sup>1/</sup></u>	<u>29</u>	<u>34</u>	<u>34</u>
Total	4,649	2,609	3,176	3,293

1/ 1958

2/ Preliminary estimate

Sources: OTRACO, CFL, BCK and Vicicongo

TABLE 9 : DREDGER OUTPUT  
(M<sup>3</sup>)

Year/ Dredger	Vlaan- Deren	Boma	Maxwell	Moanda	Mateba	Matadi	Total
1958	378,950	590,000		-	1,872,500	1,744,250	4,582,700
1959	-	58,000	499,200	541,800	1,494,850	1,529,600	4,123,450
1960	-	-	993,300	-	858,700	1,137,900	2,990,000
1961	-	-	1,367,500	709,800	1,106,800	1,377,200	4,561,300
1962	-	-	1,750,200	407,200	1,432,000	1,386,000	4,975,400
1963	-	-	1,575,000	824,600	1,288,900	736,600	4,459,100
1964	-	-	1,034,800	708,200	1,505,600	1,035,400	4,554,000
1965	-	-	1,242,000	534,800	1,192,800	787,200	3,756,800
1966	-	-	588,800	426,000	755,200	952,800	2,722,800
1967	-	-	1,014,800	297,400	963,200	1,079,800	3,355,200
1968	-	-	159,200	130,200	1,466,000	-	1,755,400
							1,846,731 <sup>1/</sup>
1969	-	-	356,800	161,600	1,347,400	37,600	1,903,400

<sup>1/</sup> The new American dredger Bauer

Source: Service des Voies Navigables

TABLE 10: RIVER TRAFFIC

(thousand tons)

Years	Upper Congo		Kasai - Sankuru		Kwango - Kwilu		Lac Leo II		Total		Total Pool
	Up	Down	Up	Down	Up	Down	Up	Down	Up	Down	
1959	442.8	419.0	201.4	305.9	50.1	123.4	13.5	37.1	707.8	885.4	31.2
1960	263.6	393.2	130.5	192.5	35.9	109.3	8.8	32.2	438.8	727.1	19.7
1961	159.8	228.3	72.7	61.4	32.7	90.6	7.5	31.5	272.7	411.9	1.8
1962	226.3	258.1	119.2	63.2	41.1	105.8	7.9	33.7	394.5	460.8	11.2
1963	210.0	280.9	131.7	82.8	39.2	88.5	8.5	31.8	389.4	484.0	7.1
1964	157.4	229.8	116.8	120.5	30.6	72.4	8.1	31.5	312.9	454.2	8.4
1965	98.1	151.6	142.3	141.8	28.0	75.6	6.3	29.8	274.6	398.8	6.2
1966	125.3	187.5	236.0	208.3	29.5	84.9	6.6	33.2	397.5	514.1	2.8
1967	141.8	213.5	187.4	249.3	29.6	78.6	5.7	29.7	364.5	571.1	3.0
1968	157.9	251.8	178.4	252.4	33.3	91.3	4.5	30.5	374.0	626.0	3.0
1969	164.2	267.1	186.6	258.1	30.1	96.4	4.3	30.8	385.1	652.4	n.a.

Source: OTRACO



TABLE 11 B: INCOMING CARGO IN THE PORT OF KINSHASA

ORIGIN	YEAR	PEANUTS	PALMKERNELS	PALMOIL		COTTON	OTHER OIL	LUMBER	COFFEE	COCOA	C.T.C.	COPAL	FIBERS	MAIZE	MANIOC & FLOUR	RICE PRODUCTS	OILCAKES	MINING PRODUCTS	EMPTY BARRELS	MISCEL- LANEOUS	TOTAL
				BULK	BARRELS																
<b>B. KASAI RIVER</b>																					
LOANGE	59	39	1,718	2,236	1,268									25					36	85	5,407
	66																				
	67																				
	68																				
	69																				
PORT FRANCOIS	59	441	2,790		751	5,617	738	46	330			1		126	18,501	257	809	181,732	100	7,171	219,410
	66	5	1,473		1	1,078		140	249	2	30			768	35	48	99	159,817	865	7,220	171,830
	67		1,246		50	488		84	633		112			254	78	142		192,968	758	9,768	206,581
	68		1,075		5	1,382	57		194		2			1,144	131	41		93,165	1,048	7,322	205,566
	69	26	1,096		16	2,703		172	523					1,041	108	426	680	101,617	1,198	9,211	238,817
CDR. KASAI (1)	59	1,162	11,738	11,268	2,263			10,748	155	11	1	2	3,481	6,980	2,848				374	2,147	52,292
	66	441	8,694	7,351	482			6,133	356				1,772	4,794	2,236				45	870	33,581
	67	862	8,902	11,388	644			5,683	365				2,177	6,106	2,719				16	1,504	40,373
	68	668	11,087	14,110	107			5,774	471				3,591	4,802	2,578				37	1,451	44,683
	69	322	10,537	15,873	1			4,094	418				3,061	345	1,319				39	864	36,933
SANKURU	59	1,443	3,553			4,006	745		2,744	6	1,954	21			1,561				176	198	17,308
	66	20	85			157			1,440		112			1					61	291	2,773
	67	10	56			159			1,207										24	262	2,002
	68	29	61			228			1,101					1	10				16	169	1,755
	69	2	34			390			1,055		4				1				22	119	1,959
H. KASAI LUL.	59	143	2,378		71	568		100	557					3	5,408	301			127	201	9,853
	66		72						52											24	148
	67		109						81				1	106	4					2	303
	68		128						168					6	7					97	406
	69		227			39			162					1	3				3	5	440
BIEF MFIMI	59	18	720		104			27,115	687		2,478	852	1,754	1		1,515			259	1,165	36,668
	66	5	481		360			26,545	1,574		1,924	9	1,060	33	341	242			29	615	33,216
	67	10	423		192			22,984	1,188	1	1,938	42	1,108	72	624	322			30	403	29,725
	68	32	537		1,101	195		23,423	1,116		2,071	97	697	200	376	189			21	396	30,451
	69	43	392		1,139	1		23,589	1,407		1,965	68	1,011	267	367	275			12	218	30,756
KWILU-KIKWIT	59	2,800	34,704	29,602	10,668				17			80	1,262	5,559	19,484				509	5,063	109,946
	66	3,687	28,631	22,915	3,316			10	40				62	5,063	6,179				100	2,829	72,836
	67	2,872	25,904	23,701	1,943			8	52				441	4,545	6,095				73	2,478	67,820
	68	3,967	30,904	28,893	1,677			68	33				480	3,849	6,169				60	2,532	78,653
	69	5,290	32,682	26,502	3,404			127	24				645	6,189	9,137				60	1,496	85,556
KWANGO -INZIA- WAMBA	59	60	4,081	2,772	1,565			103					2,172	33	131				139	728	11,784
	66	500	3,947	3,446	519			188	17				1,854	40	778				126	627	12,061
	67	465	3,167	3,071	426			400	17				1,114	49	1,408				101	541	10,794
	68	617	3,980	4,236	578			168	111	1			1,610	35	725				89	541	12,692
	69	755	3,557	2,886	318			1	42			2	1,960	41	629				67	630	10,889







TABLE 12: OTRACO: FINANCIAL RESULTS

(in thousands of Zaires)

	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969 <sup>2/</sup>
Earnings	2,097	2,116	1,670	1,375	1,750	2,429	4,746	4,731	7,248	9,856	20,736	23,972
Expenditures	<u>1,814</u>	<u>1,798</u>	<u>1,765</u>	<u>1,655</u>	<u>1,967</u>	<u>2,238</u>	<u>4,585</u>	<u>5,875</u>	<u>6,697</u>	<u>9,819</u>	<u>19,013</u>	<u>23,112</u>
Operating results	+ 283	+ 318	- 95	- 280	- 218	+ 192	+ 161	-1,144	+ 551	+ 37	+1,723	+ 860
Financial charges on:												
Loans:	- 162	- 165	- 166	- 180	- 185	- 195	- 344	- 57	- 286	- 228	- 230	- 224
Capital: <sup>1/</sup>	- 242	- 239	- 239	- 239	- 239	- 239	- 239	- 239	- 239	- 239	- 239	- 239
Miscellaneous	-	-	-	-	-	- 289	-	-	-	- 129	- 138	- 369
Balance	- 122	- 86	- 500	- 699	- 642	- 531	- 422	-1,440	+ 26	- 559	+1,116	+ 28

1/ Interest due on capital invested by Government

2/ Provisional estimates

Source: OTRACO



**TABLE 13: OTRACO: FLOATING EQUIPMENT**

Type of equipment	Age and Service
<b>A. <u>Sea going ships</u></b>	
1 1500 hp tug boat	
<b>B. <u>Matadi harbor and Estuary tugs</u></b>	
1 850 hp tug boat	Estuary service
1 660 hp tug boat	Matadi service
1 300 hp tug boat, steam	1930 Matadi service
1 220 hp tug boat	Estuary service
<b>C. <u>Passenger motor or steam boats</u></b>	
6 integrated towing boats, 900 and 1200 cv	1953-1956 middle reach
4 passenger launches, 400 hp and 450 hp	1959 and 1969 Estuary service
4 "H" class boats, 450 hp	1954 Middle reach
2 "A" class boats, 175 hp	"
17 "G" class boats, 90 hp, steam	Tributary rivers
<b>D. <u>Tugboats</u></b>	
12 "K" class, 1500 and 1000 hp	1951-1956 Middle reach
2 "L" class, 1300 hp	1969 "
11 "M" class, 350 hp	- "
4 "O" class, 700 hp	1956 "
19 "C" class, 440 hp	1953 Tributaries
10 "A" class, 200 hp	- "
19 "C" and "E" class, 175-180 hp	- "
23 "E" and "B" class, 70-90 hp	1950 "
<b>E. <u>Miscellaneous</u></b>	
4 500t Landing craft	Middle reach
41 Launches, inspection boats, etc.	-
<b>F. <u>Barges (passengers)</u></b>	
4 332-passenger barges	
8 224-passenger barges	
13 56-passenger barges	
27 10-20 passenger barges	
<b>G. <u>Barges (cargo)</u></b>	
288 dry-cargo barges, total capacity of 147,900t	
105 tank barges for a total capacity of 49,000t	
303 small barges for tributaries traffic, total capacity 18,250t	
53 small tank barges for tributaries traffic, total capacity 3,445t	
<b>H. <u>Barges (special purpose)</u></b>	
22 barges for log transport, total capacity 7,400t	
22 barges for transport of barrels, total capacity 10,700t	
3 refrigerated barges, total capacity 75t	
10 livestock transport barges, total capacity 2,200t	

Source: OTRACO

TABLE 14: RAILWAYS

	<u>Completion Date</u>	<u>Length (km)</u>
<u>OTRACO</u>		
Matadi-Kinshasa	1898	388
Boma-Tschela	1923	136
<u>Total</u>		<u>524</u>
<u>CFL</u>		
Kisangani-Ponthierville	1906	125
Kindu-Kongolo	1910	355
Kabalo-Kalemie	1915	273
Kongolo-Kabalo	1939	164
Kabalo-Kabongo	1956	246
<u>Total</u>		<u>1,163</u>
<u>BCK</u>		
Lubumbashi-boundary	1910	255
Bukama	1919	455
Bukama-Port Francqui	1928	1,123
Tenke-Dilolo	1931	520
Kamina-Kabalo	1956	447
<u>Total</u>		<u>2,800</u>
<u>Vicicongo</u>		
Branch line to Bondo	1928	121
Branch line to Titule	1932	32
Aketi-Mungbere	1937 <sup>1/</sup>	683
Bamba - Aketi	1971 <sup>1/</sup>	(185)
<u>Total</u>		<u>836</u>
	<u>Grand Total</u>	<u>5,323</u>

<sup>1/</sup> Under construction. It is expected to be completed by the end of 1971.

Source: Government of the Congo

TABLE 15: RAILWAYS: EQUIPMENT  
(Units)

	<u>OTRACO</u>			<u>BCK/KDL</u>			<u>CFL</u>			<u>Vicicongo</u>		
	<u>1/</u>	<u>2/</u>	<u>3/</u>	<u>1/</u>	<u>2/</u>	<u>3/</u>	<u>1/</u>	<u>2/</u>	<u>3/</u>	<u>1/</u>	<u>2/</u>	<u>3/</u>
<b>Locomotives</b>												
Steam	-	-	-	<u>139</u>	<u>154</u>	<u>133</u>	<u>35</u>	<u>35</u>	<u>32</u> <sup>4/</sup>	<u>7</u>	<u>10</u>	-
mainline	-	-	-	91	n.a.	n.a.	22	22	18	4	10	-
shunting	-	-	-	48	n.a.	n.a.	13	13	14	3	-	-
Diesel	<u>63</u>	<u>63</u>	<u>76</u>	<u>8</u>	<u>17</u>	<u>45</u>	<u>23</u>	<u>23</u>	<u>27</u> <sup>4/</sup>	<u>17</u>	<u>17</u>	<u>22</u>
mainline	27	27	33	2	n.a.	n.a.	13	13	13	7	11	16
shunting	36	36	43	6	n.a.	n.a.	10	10	14	10	6	6
Electric	-	-	-	<u>40</u>	<u>41</u>	<u>46</u>	-	-	-	-	-	-
mainline	-	-	-	35	n.a.	n.a.	-	-	-	-	-	-
shunting	-	-	-	5	n.a.	n.a.	-	-	-	-	-	-
Railcars	3	3	3	-	3	2	-	-	-	-	-	-
Passenger coaches	70	70	94	150	124	152	25	25	33	16	7	7
Freight wagons <sup>5/</sup>	3119	2352	2631	4100 <sup>6/</sup>	3583	3581	556	556	570	345	331	331
Privately owned wagons	231	231	230	-	-	-	-	-	-	-	-	-

1/ As of January 1, 1968

2/ As of January 1, 1969

3/ As of January 1, 1970

4/ Preliminary estimates

5/ Excluding service freight wagons

6/ Including 150 hired from OTRACO

Source: OTRACO, BCK-KDL, CFL and Vicicongo

TABLE 16: OTRACO RAILWAYS: PASSENGER AND FREIGHT TRAFFIC

	CFMK				Mayumbe	
	Passengers (thou- sand)	(million passenger/km)	Freight (thousand tons)	(million ton/km)	Freight (thousand tons)	(million ton/km)
1959	523	61	2,135	519	111	7
1960	575	63	1,533	431	123	8
1961	843	96	1,006	294	132	7
1962	880	94	1,119	320	125	7
1963	1,489	161	1,206	303	119	8
1964	1,123	132	1,230	356	127	10
1965	865	109	1,076	303	133	9
1966	1,093	141	1,284	377	120	8
1967	1,265	154	1,323	396	126	9
1968	1,518	176	1,431	437	121	9
1969	1,376	146	1,469	445	103	7

Source: OTRACO

TABLE 17: CFMK: PRINCIPAL COMMODITIES TRANSPORTED DIRECTION MATADI

(Thousand tons)

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Copper	100.0	42.2	-	-	20.3	77.6	102.8	137.8	169.1	163.5	184.8
Tin	2.5	2.1	-	-	-	-	-	-	-	-	-
Cassiterite	8.5	10.1	3.9	7.6	7.4	5.1	2.1	6.3	5.3	5.8	5.1
Palm kernels	20.3	4.7	10.6	2.2	1.0	2.1	-	2.6	5.8	1.4	9.6
Palm oil	205.7	191.1	142.7	171.8	160.6	144.8	102.5	111.9	133.7	163.6	134.1
Cotton	47.3	35.8	11.3	4.5	8.6	3.5	-	-	-	1.1	5.8
Coffee	43.3	50.7	25.3	19.8	32.9	32.2	12.0	27.8	25.7	30.4	35.7
Maize	8.2	0.9	-	-	0.6	0.2	-	0.2	0.2	-	0.1
Peanuts	1.3	0.7	-	-	0.1	0.1	-	-	0.2	-	-
Manioc and flour	57.1	28.1	5.7	3.9	1.2	2.8	0.4	1.2	-	0.7	0.9
Oil cakes	77.6	74.0	44.2	40.9	39.0	48.1	36.1	30.7	39.4	32.0	25.6
Wood	59.1	62.8	52.2	41.2	38.9	40.2	31.7	24.8	22.6	16.8	23.5
Zinc concentrates	63.4	34.4	-	-	-	-	-	10.6	10.4	32.2	15.2
Rubber	37.7	33.7	30.8	38.6	35.9	31.8	21.4	23.5	29.4	38.6	35.2

TABLE 18: BCK: TRAFFIC AT MAIN CONNECTIONS  
(Thousand tons)

	1959	1965	1966	1967	1968	1969
<u>Total</u> - transit not included	<u>1,221.2</u>	<u>1,497.2</u>	<u>1,480.0</u>	<u>1,434.6</u>	<u>1,450.7</u>	<u>1,471.4</u>
Export	773.7	758.9	741.5	781.2	757.0	698.4
Import	447.5	738.3	738.5	653.4	693.7	773.0
<u>Port Francqui</u> - Total	<u>296.7</u>	<u>247.2</u>	<u>382.1</u>	<u>402.3</u>	<u>380.8</u>	<u>422.1</u>
To Port Francqui	<u>185.3</u>	<u>116.9</u>	<u>169.8</u>	<u>206.5</u>	<u>204.4</u>	<u>217.1</u>
- mining products	183.0	107.2	158.7	192.4	191.9	200.9
- other	12.3	9.7	11.1	14.1	12.5	16.2
From Port Francqui	<u>111.4</u>	<u>130.3</u>	<u>212.3</u>	<u>195.8</u>	<u>176.4</u>	<u>205.0</u>
<u>Dilolo</u> - Total	<u>531.6</u>	<u>726.6</u>	<u>627.7</u>	<u>656.6</u>	<u>736.7</u>	<u>640.4</u>
Exports	<u>446.7</u>	<u>513.9</u>	<u>395.7</u>	<u>410.3</u>	<u>436.8</u>	<u>384.7</u>
- mining products	434.1	511.2	395.1	408.2	435.1	381.4
- other	12.6	2.7	0.6	2.1	1.7	3.3
Imports	<u>84.9</u>	<u>212.7</u>	<u>232.0</u>	<u>246.3</u>	<u>299.9</u>	<u>255.7</u>
- other	84.9	195.3	222.9	137.9	206.2	198.5
- coal	-	17.4	9.1	108.4	93.7	57.2
<u>Sakania</u> - Total	<u>392.9</u>	<u>523.4</u>	<u>470.2</u>	<u>375.7</u>	<u>333.2</u>	<u>408.9</u>
Exports	<u>141.7</u>	<u>128.1</u>	<u>176.0</u>	<u>164.4</u>	<u>115.8</u>	<u>96.6</u>
- mining products	108.9	116.4	138.1	129.3	96.1	93.6
- other	32.8	11.7	37.9	35.1	19.7	3.0
Imports	<u>251.2</u>	<u>395.3</u>	<u>294.2</u>	<u>211.3</u>	<u>217.4</u>	<u>312.3</u>
- general merchandise	60.0	96.0	117.9	96.9	105.4	107.6
- coal	191.2	299.3	176.3	114.3	112.0	204.7
<u>Transit</u>						
to Zambia	18.8	14.9	91.0	97.8	125.0	98.6
ex Zambia	83.5	1.4	100.4	113.5	153.7	118.1

1/ Preliminary estimate

Source: BCK



TABLE 19: ROAD NETWORK  
(km)

	Min. 6 m wide			Less than 6 m wide		
	Total	Bitumen	Gravel	Earth	Gravel	Earth
Primary Roads	36,700	1,800	1,600	1,400	12,200	19,700
Secondary Roads	91,300	100	100	100	16,000	75,000
Private Roads	12,700	-	100	-	600	12,000
	<u>140,700</u>	<u>1,900</u>	<u>1,800</u>	<u>1,500</u>	<u>28,800</u>	<u>106,700</u>

Source: Report of EEC Economic Mission, 1963